AMERICAN VETERINARY REVIEW.

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EDITORIAL.

UNITED STATES VETERINARY MEDICAL ASSOCIATION.—The Thirty-second Annual Meeting of this association convened at Des Moines, Iowa, on September 10th, 11th and 12th, and, considered from a business standpoint, was a decided success. When we look for comfort and plenty of social enjoyment we go to the East, whereas the West stimulates work and the transaction of business. The meeting just closed will have great practical and far-reaching results.

Eastern members consumed more than a week's time in attending this meeting. On September 7th a party of well-known veterinarians started from Philadelphia, arriving at Chicago the next day, where they were obliged to lay over for twelve hours. They were received by their Chicago friends and given a lunch at the residence of Dr. M. H. McKillip. In the afternoon they visited the new college, then enjoyed a drive through the parks, and in the evening were tendered a dinner at the Palmer House by the McKillip Veterinary College. In the meantime members from other Eastern States and Middle States had arrived in Chicago, and they all started, a merry party, for Des Moines. Here the Iowa State Veterinary Medical Association was in session, and several Eastern veterinarians attended their meeting, while others took in the sights of the State Fair.

The first day of the meeting was devoted to routine business. President W. Horace Hoskins opened the meeting and Secretary Richards, in behalf of the Governor, who was out of the city, delivered a brief address of welcome. Presi-

dent Hoskins then read his annual address, which was one of the strongest ever made by this zealous association worker. Then the regular programme was taken up and the reports of the committees on intelligence and education and on diseases were heard. The reading of these required so much time that adjournment was taken without discussion on them having been entered into.

The second day was booked for the reading of papers, but was almost wholly taken up by the discussion of tuberculosis. This subject has become of such great practical importance, that there seemed to be no end of inquiry, and several attempts to close the discussion were made fruitless by the enthusiasm of those who have become experts in all that pertains to this disease. The freshness and brightness with which this subject was discussed has deeply impressed the Western veterinarians, and several of them expressed to the writer their appreciation of the high degree of intelligence displayed by some Eastern speakers. The subject finally wound up in a resolution indorsing the tuberculin test and condemning the physical diagnosis only as unreliable and microscopical examination of dairy milk as deceitful and unwise in the present day.

The election of officers resulted in the re-election of President W. Horace Hoskins for a third term, an honor not bestowed before on any one President. Drs. Osgood, Meyers and Harrison were elected Vice-Presidents, Dr. Stewart, of Kansas City, Secretary, and Dr. Robertson, New York, Treasurer.

The closing session was devoted principally to the reading of papers on pertinent subjects and little or no time was left for their discussion. They were as follows: "The Horse as a Producer of Antitoxines," by Prof. Olof Schwarzkopf; "Accidents Incident to the Casting and Confining of Animals for Surgical Operations," by Dr. Tait Butler; "Roaring, and its Operative Treatment," by Dr. S. J. J. Harger; "An Improved Method of Plantar Neurotomy," by Dr. M. H. McKillip; "The Therapeutics of Colics," by Dr. W. L. Williams; "Hypodermic Cathartics," by Dr. M. H. Reynolds, and

"Anæsthetics in Horses," by Dr. J. C. Meyer, Jr., of Cincinnati, who also gave a practical demonstration of an inhaling apparatus of his own device. All of the papers were of a high order of excellence and were listened to attentively.

The meeting was followed in the evening by a banquet at Evan's Cafe, at which a good menu was provided. At first it looked as if the members were doomed to drink Iowa water, but finally the barriers of law were broken and wine and beer flowed freely, producing that feeling of cheerfulness, without which a banquet must remain a dead formality. President Hoskins officiated as toast-master. Congressman J. A. T. Hull responded in a very happy style to the toast, "The Relation of National Legislation to the Veterinary Profession," and the toasts of Dr. Stalker and Dr. Tait Butler were full of the best kind of humor.

ANNUAL MEETING OF COLLEGE FACULTIES.—The Second Annual Meeting of the Association of Veterinary Faculties of North America, was held at the Savary House, Des Moines, on the evenings of September 10th and 11th. In attendance were: Prof. Chas. P. Lyman, President of the Association; Prof. Olof Schwarzkopf, Chairman of Executive Committee; Prof. Osgood, of Harvard; Profs. Pearson and Harger, of University of Pennsylvania; Dr. Gill, of N. Y. College of Veterinary Surgeons; Dr. Salmon, of National Veterinary College; Drs. Wattles and Stewart, of the Kansas City Veterinary College, and Drs. Stalker and Niles, of the Veterinary Department, Iowa State College. As new delegates, were present: Dr. Duncan, of the Toronto Veterinary College; Dr. A. H. Baker, of the Chicago Veterinary College, and Dr. Brenton, of the Veterinary Department of Detroit, Mich. Dr. Duncan evinced a great interest in the deliberations of the association but the last-named gentlemen were not yet ready to sign the constitution.

President Lyman opened the meeting with a short address, and after disposing of some routine business, an animated discussion took place upon an open letter from Dr. Liautard, calling in question the legality of the association. A committee was appointed to draft a reply to Dr. Liautard in connection with

a committee from the U. S. V. M. A. Dr. Wattles then read a paper on the "Results of the Prescribed Entrance Examination," which was well received and cheered. Dr. Harger, in place of Dr. Detmers, discussed the subject "State Boards of Veterinary Medical Examiners in their Relation to Veterinary Colleges," a theme which stimulated a very spirited discussion, resulting in the appointment of a committee to try to devise some uniform legislation and to report at the next meeting.

The only subject discussed at the second meeting was that of a "Uniform Degree," all the other subjects on the programme being laid over until the next meeting. There remains a strong difference of opinion as to the best veterinary degree, and it was the general sentiment of the meeting that no definite degree could be agreed upon before a uniform course of instruction could be devised and adopted.

It became quite obvious at this meeting that in the future the association should have a day for herself.

THE RECENT STATE LAW.—If a law were simultaneously enacted in every State of the Union which fosters a veterinary college to compel every prospective student to take a matriculant examination, and every graduate to pass the Board of Regents, it would be fair for all hands. Where, however, one State places barriers in front of her colleges, and other States hold out inducements to receive them, the result is unfair. Young men seeking to acquire a professional knowledge will not select a seat of learning which is so hampered by State laws as to make his chances of success less than he can procure in other States. There can be no doubt but that the framing of the recent law was primarily in the interest of higher education, but the schools in this State cannot hope to attract an increased number of students from other States who expect to locate outside of New York; and the abortion that was brought on by the local irritation of that special meeting has destroyed all confidence in the good points which the law originally possessed. And all of this through the efforts of a few to bolster up a decayed institution whose graduates were a few short years ago considered

ineligible to admission in this very society on account of insufficient training.

OPENING OF THE COLLEGES.—All over the country, from New York to California, this month will witness the opening of the veterinary institutions of learning. It is not possible to suppose that there will be an increased attendance over the past five years, since the general depression in the live stock interests, induced by half a dozen factors—such as the decreased demand for horses by virtue of more or less national idleness in business centres, by the substitution of electricity for horse-power upon street cars, the passing craze of the bicycle, the threatened invasion of the horseless carriage, State laws limiting the earning capacity of horses who compete for purses—all tend to bring the price of horses to such a figure as to cause them to be, from a financial point of view, unworthy the expenditure of fees for medical attendance when they become sick or disabled. All of this tends to break the enthusiasm of men seeking this as a profession upon which to expend their money, minds and energies. This is, however, but a repetition of what has occurred many times before in general financial and commercial depressions, its influences are by no means confined to our profession, and will be followed by a renewed impulse as general prosperity returns to the country. Sanitary medicine is making immense progress, and the services of the higher educated men are being sought upon an increasing scale every year; and when general thrift returns to the country the interests which command our services will, with all other professions and businesses, participate in the common prosperity.

A FUNNY LITTLE EDITORIAL IN THE JOURNAL.—In the September issue of the *Journal of Comparative Medicine and Veterinary Archives* one of its numerous editors felt called upon to reply to certain remarks made by us in the August REVIEW relative to the action of a special meeting of the State Society in June, in placing in nomination for the positions of veterinary examiners under the Board of Regents certain teachers in veterinary colleges in this State. In the

article which has been the subject of his gracious condescension we deplored what, in our humble judgment, appeared to be a cruel injustice to the profession of veterinary medicine; and we were, therefore, especially outspoken, since we considered that the result complained of had been obtained unfairly and by a subterfuge. The editor in question indulged in considerable nonsensical abuse of this journal; but, while occupying two whole pages of his valuable space, fails to utter a word in refutation of the justice or accuracy of our charges. He makes the serious counter-charge, however, against us that, in our ignorance, we have committed the heinous offence of dubbing the State *Society* an *association*, but destroys the beauty of his accurate English by asserting that "there *were*, therefore, no option," etc. He replies to our charge that the afternoon session was called to order and the morning's proceedings rescinded and expunged from the minutes when certain opponents had not returned to the hall, by villifying one of those who had departed with the firm conviction that the proposition to admit teachers upon the board had been defeated for all time. He characterizes this man who had stood up for fair play as one who "interfered" with the morning session, and he further deplores the fact that he had not been gagged for being in arrears with his dues, but makes no mention of the subsequent expulsion of his co-editor from the society for owing three times as much money as that certain opponent *were* charged with withholding from the empty coffers of the State Society, and which the said opponent *have* since paid in full, and for which he holds the *Society's* receipt.

His "reply" goes on to charge the editor-in-chief of this journal with being a citizen of France, and other serious misdemeanors for which his ancestors are in part responsible.

One, and only one, of the offences which are succinctly made the object of his vituperation is worthy of our serious consideration; the others are foolish, ridiculous, childish, and unworthy of any consideration whatever, save as a method to evade the real point at issue; and that offence is that the staff editors of THE REVIEW have failed to attend the meet-

ings of the State Society. To this charge we plead guilty, but we are recompensed for this neglect of duty by the reflection that in that remissness we are saved the suspicion that we may have been instrumental in producing a result that should bring a blush to the cheek of those who are responsible for it.

THE NEW YORK STATE VETERINARY MEDICAL SOCIETY met in annual convention on September 5th and 6th in New York City, and there was a very full attendance of members, especially from the interior and northern portions of the State. We were gratified to see such an interest in associational matters, and believe that the members were present in the interest of veterinary science and for the educational and social pleasures which usually accompany such events. An attempt to have that portion of the minutes which referred to the special June meeting disapproved, failed utterly, and it did appear most singular that, although the large majority of those present were absent at that meeting, and heard there for the first time charges of irregularity and conniving, they never asked a question of explanation, nor offered a word in disapproval, but on the standing vote rose to their feet and recorded their approval of a very irregular set of minutes. If one had not known that the affair was impromptu, he would have been suspicious that a programme of action had been agreed upon, and that the members present were simply acting their parts. Aside from this evident unwillingness to discuss the action of those who had controlled the special June meeting, the first day's proceedings were interesting and instructive, being enlivened by two very well prepared papers, one by Dr. Crowforth on "Acarua Demodex Folliculorum," the other by Dr. Willyoung upon "Colics in Horses." The former paper was illustrated by plates and the microscope, while the latter elicited interesting discussion.

Not so harmonious, however, were the proceedings of the second day. The unity of action which marked the vote on that questionable minute motion could not be maintained when the election of new members was brought up; and one

nomination, more objectionable than the others, kept the members wrangling from convening time until long past noon, and at that hour no satisfactory disposition had been made of the proposal. At this time all adjourned to the operating-room to witness a difficult and neatly performed removal of the testicles from a criptorchid by Dr. Wende, of Buffalo, while Dr. Harger failed to keep his appointment to perform his famous "Arytenectomy" upon subjects that had been secured for him, though a substitute was secured for the absent surgeon. Following the operation, many of the members got together and endeavored to again force the offensive applicant upon the "association" (with apologies to the *Journal of Comparative Medicine*), but they were not as successful in this experiment as they had been at the special meeting; and the question was laid upon the table indefinitely.

Looking upon this meeting in point of numbers present, and through the spectacles of those who controlled the special meeting, it was a pronounced success; as an annual meeting of the Empire State Association, when subjects of grave sanitary and professional importance should engage the deliberation of so august an assemblage, it was—well, it showed that such a thing was not impossible, though the meeting of 1895 was not such a one.

ON ACCOUNT of the many important association meetings which took place in September, and the large number of interesting papers there offered—many of which are published in full in this issue—much valuable original matter is unavoidably crowded out of this number of THE REVIEW, notwithstanding the fact that we have added sixteen extra pages of reading matter. We ask the indulgence of our collaborators and correspondents, assuring them that their productions are gratefully received and will have an early place in our pregnant pages.

THE ANNUAL MEETING of the California State Veterinary Medical Association will be held in San Francisco, on Wednesday, December 11, and Secretary Dr. Archibald informs us that the foundation for a splendid meeting is already laid.

ORIGINAL ARTICLES.

TUBERCULOSIS IN MASSACHUSETTS.*

Mr. President and Gentlemen:

During the past year much adverse opinion and antagonism has been aroused in Massachusetts over the legislation on tuberculosis. No other matter has attracted so much attention among the members of the veterinary profession, and no subject has interested the farmers and agricultural classes to anything like the same extent.

Of course the greatest interest has centered in the work of the State Board of Cattle Commissioners.

You were informed a year ago of the nature of the bill adopted by the legislature in June, 1894. That bill gave the commissioners almost unlimited power. Up to that time animals were condemned by physical examination alone. In September of last year, the commissioners decided to use the tuberculin test in place of physical examination. In order to do this, it was felt that not only should animals, as reported by the several inspectors, be tested with tuberculin, but that systematic regulations should be adopted throughout the State providing for the quarantining of all animals until tested; for regulating the importation of all animals from without the State; for providing a market at Watertown and Brighton at which tested animals might be procured by those desiring to have them; and, lastly, for the regular and systematic examination of all neat cattle throughout the State, and the destruction of all animals that reacted to the test.

The system adopted by the commissioners for the carrying out of these ideas embraced the following points:

1st. The test with tuberculin of all suspected cases reported by local inspectors.

2d. The regulation of the importation of all neat stock into this Commonwealth from all points without its limits.

3d. The quarantining of all such imported animals until

*Report of State Secretary J. M. Parker, D.V.S., U.S.V.M.A., at Des Moines.

tested with tuberculin, and either tested or certified as sound.

4th. The establishment of regular quarantine stations at which all animals brought within the limits of the Commonwealth should be delivered in quarantine.

5th. The forbidding of the importation of all neat stock within the limits of this Commonwealth unless delivered at these points, except upon written permit of the Board.

6th. The branding, in a distinct way, of all animals that had successfully passed the tuberculin test.

7th. A systematic examination, by the use of tuberculin, of all animals within the State, beginning with the counties of Nantucket, Dukes and Barnstable.

This policy of the Board was first made public at Worcester on October 25th, 1894, and came into force one month later, on November 25th, and this meeting at Worcester was the first intimation to either the general public or the veterinary profession that any such radical measures were proposed.

On the adoption of this policy by the Commissioners the work of the Board, as stated in their Annual Report, may be subdivided into four distinct heads, as follows:

1st. The attending to the inspection of all animals reported by the local inspectors as suspected, and the testing by tuberculin of all such as are reported to be tuberculous.

2d. The quarantining of all neat cattle which are delivered at the quarantine stations at Watertown, Brighton or Somerville, and the testing with tuberculin of such of them as are not to be immediately slaughtered at the Brighton abattoir, or which are not to be immediately transported to points without this Commonwealth, which calls for a weekly service extending over three days.

3d. The systematic examination with tuberculin of all herds within the State, which includes the test by tuberculin, the destruction of all diseased animals, the disinfecting of the contaminated premises, and the branding of all animals found free from disease.

4th. The granting of permits for the transportation of animals from without the limits of this Commonwealth to various points within the State, where they are immediately

quarantined, and the testing of the same with tuberculin in the same manner as already described.

The most important of these is, I think, the first, i.e.: The work of the local inspectors and the testing with tuberculin all animals quarantined by them.

The law which I had the honor of reporting to this association at our meeting in Philadelphia last year, provided that "the mayor and aldermen of cities and the selectmen of towns shall within thirty days after the passage of this act, and thereafter annually in the month of March, appoint one or more persons to be inspectors of animals and provisions." Under this law 394 persons have been appointed; of these 394 only 58 are veterinary surgeons, 136 are farmers, 10 are cattle dealers, 20 doctors of medicine, 8 butchers; the rest are made up of grocers, painters, provision dealers, wood and coal dealers, etc.

The inspectors were expected to inspect all herds in their different localities twice yearly; all suspected cases to be quarantined and reported to the Board of Cattle Commissioners, in whose hands the final decision rested. From November of last year all suspected animals have been tested with tuberculin, and all those reacting to the test have been slaughtered. Local inspectors are also expected to be present at slaughter-houses while killing is going on, and all animals found diseased, however slight the disease, are condemned to the rendering tank.

In addition to the local inspectors, the Commission was empowered to appoint agents to assist in the work of testing suspected animals.

The second head: "The quarantining of all neat cattle which are delivered at the quarantine stations at Watertown, Brighton or Somerville, and the testing with tuberculin of such of them as are not immediately slaughtered at the Brighton abattoir, or which are not immediately transported to points without the limits of this Commonwealth, which calls for a weekly service extending over three days," was undertaken for the purpose of providing a market where farmers could secure tested animals to take the place of those slaugh-

tered and to insure that only healthy animals are brought into the State. The Board encountered many difficulties in this portion of their work. To carry out their ideas, it was necessary to quarantine the State, and prohibit the importation of cattle from other States, unless they had previously undergone the tuberculin test. Agents were appointed to take charge of this work at Brighton and Watertown markets where all animals were "subjected to the test before being offered for sale."

In applying the tuberculin test to this class of cattle innumerable difficulties were encountered. In referring to the matter the Commissioners in their Annual Repor tpoint out that "these cattle are collected from different localities and brought together for the first time. They have been put into crowded cars, have suffered the excitement attending an unusual journey, have probably received their food and water at irregular periods, and in every possible way have been subjected to conditions utterly foreign to their ordinary existence. Neat stock are not mere machines, but are excitable animals, materially affected by unusual conditions. Another significant fact in relation to the cows brought to these markets is, that they generally are or are about to be new milchers; and it is within the knowledge of all who have had practical experience in this direction that this greatly increases their nervous sensibilities, and experiment shows that this actually has a direct effect on their internal temperature."

The Commissioners further say: "An examination of the tests at these markets has proved to the satisfaction of the Commission that all of these abnormal conditions have very materially complicated the temperature tables, as a result of which they have made a few mistakes in arriving at their conclusions."

An examination of the tests "covering the first six weeks of the work," will show that 6.21 per cent. of all animals offered for sale at the markets have been shown to be tuberculous.

The commissioners further report that "fewer errors occurred in the last three weeks than during the earlier experi-

ences." The fewer number of errors being due to the fact that a greater reaction was considered necessary by the Commissioners before the animals were condemned. During the earlier period a fewer number of degrees of reaction was taken as indicating tuberculosis; but from the large number of errors creeping in, the necessary reaction was increased, so that there was less likelihood of error in this direction, but at the same time there was a greater danger of passing tuberculous animals as sound. That this danger existed is shown by the report of the Inspector of the Boston Board of Health. At the Brighton abattoir, where all animals condemned by the Commissioners were slaughtered, there were in all (from November 25th, 1894, till January 1st, 1895), 104 animals condemned and killed on the tuberculin test; of this number 82 were tuberculous and 22 were non-tuberculous, showing a percentage of error of 21.1. On the other hand, 63 animals after being pronounced free from disease, the brand of the Commonwealth having been placed on the right hip, were bought by dealers and killed for beef; of these 63 animals 4, or 6.34 per cent., were found to be tuberculous; while in one week, in February, 10 animals were condemned as tuberculous, and of the 10, six were found to be free from disease.

The third head: "The systematic examination with tuberculin of all herds within the State, which includes the test by tuberculin, the destruction of all diseased animals, the disinfecting of the contaminated premises, and the branding of all animals found free from disease," is perhaps the feature of the work that has roused the greatest opposition among the farmers. To use their own words: "The Commissioners felt that the best method of protecting all parties and eradicating the disease was only to be obtained by a thorough scientific examination of all neat stock throughout the State. They, therefore, decided to begin a systematic examination of all animals in the State, county by county, taking proper precaution, as fast as all the animals in each county had been examined, destroyed or marked, to prevent, by quarantine regulations, the importation within the limits of animals which had not already been so examined.

"The Commissioners decided to begin this systematic examination in the counties of Nantucket, Duke sand Barnstable. These counties were chosen because of their natural position and because "they are comparatively small, contain but few animals, presumably as healthy as any in the State, and that the small appropriation would be practically exhausted by the time the examination of the cattle within these limits could be completed.

"At the time of the making of their report the Commissioners had completed the examination, under this order, of all animals in the island of Nantucket, and they report that the result in the island has been very satisfactory; that of six hundred and sixty-five animals examined, only six have been found diseased."

The summary of their work for two months shows that at the Brighton examination, 89 or about 6.21 per cent. of all animals examined, were tuberculous, while at Nantucket 6 were tuberculous, or less than 1 per cent., the low percentage in these counties being due probably to their isolated position, and to the employment of simpler methods of keeping and feeding the dairy stock.

In January of the present year, the appropriation of $100,000 having been expended, along with the $50,000 allowed the Commissioners by the Governor, the Commissioners applied for a largely increased appropriation, with increased powers to carry on the work begun in November, 1894; and in his inaugural address the Governor outlined the work proposed to be done by the Commissioners. He said: "The vast importance of the work now undertaken under the law of 1894 by the Cattle Commission cannot be overrated. A great crisis confronts us. * * * The alarming spread of tuberculosis is confined in great measure to the last ten years. The vigorous and systematic measures now adopted are similar to those employed when pleuro-pneumonia invaded Massachusetts. * * * In such legislation as may be enacted I know that your wisest care and best judgment will be exercised, and that no backward steps will be taken."

And in February, at the hearings before the joint Senate

Committees on Agriculture and Public Health, the Commissioners again referred to the methods that had so successfully been employed in eradicating contagious pleuro-pneumonia, the inference being that these methods would be equally successful with tuberculosis. At these hearings the opponents of the Cattle Commissioners developed unexpected strength. There was a feeling among them that tuberculosis could not be handled in the same way as contagious pleuro-pneumonia. Contagious pleuro-pneumonia is an extremely rapid and fatal disease; it will usually develop in from three to six weeks after exposure, and often acute cases are fatal in from seven to twenty days after the animal is attacked. On an average from sixty to eighty per cent. of animals exposed will contract the disease, and about fifty per cent. of these will die.

On the other hand, bovine tuberculosis is an extremely slow and chronic disease; it is not a fatal disease, but it has a tendency to become self-limiting; it is not a highly contagious disease, for a large proportion of cases are entirely harmless, and usually long exposure and intimate association are necessary before infection takes place; and, further, it is not confined to the bovine, but is found in all domestic animals, as well as man.

When the last case of contagious pleuro-pneumonia is destroyed the danger ceases to exist; with tuberculosis it is entirely different. In fact, the conditions surrounding the two diseases are so dissimilar that it is impossible to draw any analogy between them.

Further, it is believed that the danger was not so great as to justify such extreme measures as those proposed; for, while there is a certain element of danger in the use of the meat or milk of cows that were *badly diseased*, yet these cases could, as a rule, be picked out by physical examination, and with the use of tuberculin in suspicious cases the danger would be reduced to a minimum, and would be by no means so great as to justify the use of tuberculin throughout the State, with the accompanying expense to the State and loss to the farmers which would result from the total destruction of all animals that would react to the test.

After a great deal of discussion in the legislative bodies, a compromise bill was adopted giving an appropriation of $100,000 for the carrying on of the work, restricting the use of tuberculin to such cases as were thought to be diseased on physical examination and allowing the farmers full value at the time of slaughter, without taking into consideration the fact that the animal at the time of slaughter was afflicted with tuberculosis. This applied only to cattle that had been in the State six months.

In consequence of the smallness of the appropriation and the restrictions placed upon the use of tuberculin this bill did not meet with the approval of the supporters of the Commissioners, and strenuous efforts were made to have the Governor veto the measure; finally the bill was submitted to the Attorney-General for his opinion on the matter. This opinion is important, and is of great interest to all interested in this question. In his letter to the Governor the Attorney-General says: "Section 10, amending Sec. 45 of the Act of 1894, provides that whenever the Board of Cattle Commissioners, after an examination of contagious disease among domestic animals, become satisfied that the public good requires it, they may cause such animals to be killed without appraisal or payment, or without expense to the owner." The section further provides that "if it shall subsequently appear, upon post mortem examination or otherwise, that said animal was free from the disease for which it was condemned, a reasonable sum therefor shall be paid to the owner thereof by the Commonwealth; provided, however, that whenever any cattle afflicted with the disease of tuberculosis are killed under the provisions of this section, the full value thereof at the time of slaughter, for food or milk purposes, without taking into consideration the fact that the animal at the time of slaughter was then afflicted with such disease, shall be paid to the owner thereof out of the treasury of the Commonwealth, if such animal has been owned within the State six months continuously prior to its being killed."

The constitutional question arises, says the Attorney-General, upon the provision that when meat unfit for food by

reason of tuberculosis is seized, or cattle with the same disease are killed, the owner shall receive full value of the carcass, for food or milk purposes, "without taking into consideration the fact that the same is then infected with such disease."

It may well be assumed that a carcass that is infected or an animal that is infected with tuberculosis has practically no value for meat or milk purposes. That such was the intention of the legislature is clearly deducible from the provisions of Statutes, 1894, Chap. 491, Sec. 10, of said Statute (as amended by the bill in question), authorizing the destruction of a carcass whenever in the opinion of the inspector it is diseased or unfit for food. Section 15 of the same chapter makes it a penal offense for anyone to sell or have in his possession, with intent to sell for food, any diseased animal or any diseased carcass. Statute, 1886, Chap. 318, Sec. 2, also makes it a penal offense to sell the milk of a diseased cow. The meat or milk of a cow that has been pronounced unfit for sa e by the legislature, and the sale of which is a criminal offense, cannot be regarded as having any market value.

The section under consideration, therefore, must be taken to authorize and require the payment to the owner of a diseased cow, or an infected carcass, which by the determination of the legislature is worthless, a value equivalent to the value of sound cattle or sound meat. This is not compensation, it is a gift.

If it were provided that the Board, having jurisdiction of the subject matter, might condemn all suspected meat or kill all suspected cattle, leaving it uncertain whether the disease existed, the legislature might reasonably provide that compensation for cattle so destroyed should be paid without determining the question of disease. But the statute in question is not of that character. It provides for a definite adjudication as to the existence of disease or otherwise. This fact having been determined, the bill provides that the owner shall receive "reasonable compensation" for cattle that prove to be sound, and which were killed under mistake by the officers. This is as it should be. But, on the other hand,

in respect to cattle as to which there is a final determination that they are diseased, and therefore worthless for food and milk purposes, the bill provides that this fact shall be disregarded in estimating the damage to the owner, although it is a fact which destroys their value.

The Constitution (Chap. 1, Sec. 1, Art. 4) authorizes the legislature to impose taxes "to be used and disposed of * * * for the public service." The legislature, under our Constitution, has no right to take money by taxation from one man to enrich another; and it is of no question how meritorious upon general consideration the position of the recipient may be. Money raised by taxation can only be used for public purposes."

Applying this principle to the bill in question, I am of the opinion that so far as it requires the payment of a fictitious value in all cases to the owners of cattle killed as diseased, and consequently worthless, it is an appropriation of public money for the benefit of individuals. It takes money from the common fund contributed by all citizens and confers it as a gift upon such owners of diseased cattle. If this is so, it is an unauthorixed exercise of the power of taxation.

The Attorney-General then suggests: "That the legislature has the right to order such compensation as it deems reasonable to individuals for the inconvenience and annoyance of having their cattle seized and destroyed, and especially upon suspicion and when it is not certain that they are tainted." He then concludes, "upon the foregoing principles and upon such consideration as I have been able to give the matter in the brief time allotted me, I am constrained to advise your Excellency that the provisions of the bill in question, which provides that owners of cattle shall be paid full value thereof for food, and milk purposes, without taking into consideration the fact that the animal or carcass is at the time of taking infected with tuberculosis, are unconstitutional.

These, in brief, are the principal points in Attorney-General Knowlton's letter to the Governor declaring certain sections of the tuberculosis bill unconstitutional. After this

opinion had been given the Senate recalled the bill, eliminated the objectionable clauses, and passed to be engrossed a new bill, which received the Governor's signature. The bill as it was finally adopted by the legislature amends the old bill of last year, so that inspectors shall examine *sheep and swine* as well as cattle. It shall also be their duty to inspect barns and stables when directed to do so by the Commissioners.

Section 27 of the old law is amended so that when an animal is under quarantine over ten days the expense of such quarantine shall be paid by the Commonwealth. Section 45 is amended so that instead of half value owners shall have full value for animals condemned as tuberculous, the value not to exceed $60 for each animal.

Section 13, of Chap. 496, of 1895, provides that the sum expended under the act shall not exceed $100,000.

Section 14 provides that the use of tuberculin shall be restricted to cattle brought into the Commonwealth from without its limits, and upon any animal or animals, upon consent in writing of the owner, and upon any animal condemned as tuberculous upon physical examination by a competent veterinarian.

It will be seen that this act gives the owner full compensation. The practical working of the act being that the State buys cattle that react to the test, paying the owner full valuation for them; the cattle then come into the possession of the State when they are killed and the post mortem examination made.

It will be noticed that the principal difference from last year is that the compulsory use of tuberculin is restricted, and the farmers get full value, instead of half value, for animals destroyed on suspicion, before they are proved to be diseased by post mortem examination.

Farmers in Massachusetts, as a rule, are not opposed in principle to the inspection of their herds, they are not opposed to the adoption of measures looking to the eradicating of disease; but they are opposed to the sensational, alarming and exaggerated headlines in newspapers (see *Boston Herald*)

describing the condition of affairs as being so fearful, and leading the public to imagine that milk is the prime cause of tuberculosis in human beings. They are opposed to the compulsory use of tuberculin in their herds because they feel that the percentage of errors in the work of the Commission, so far, has not been such as to warrant the general use of tuberculin throughout the State. Again, many of the farmers have grave doubts whether the sacrifice demanded of them will result in the complete eradication of the disease from among their herds. They would not object, however, to the thorough and frequent physical examination by competent persons with the tuberculin test in suspicious cases. This, with the thorough disinfection of infected barns would, in the opinion of many, remove all serious danger, and gradually a better condition of affairs would result. The question of expense is also a grave one. The work of the Commission in the isolated counties of Nantucket, Dukes and Barnstable, where there are only 665 cattle, with their work at Brighton, Watertown and Somerville, and the examination of isolated cases reported by inspectors for about two months, absorbed more than $100,000.

When one considers that there are 223,636 cattle in the State, and the examination of 5,394 cost over $100,000, some vague idea of the cost is secured.

The lessons to be learned from the experience gained in Massachusetts would seem to indicate that while tuberculin is a most valuable aid to diagnosis, yet under certain conditions, especially immediately after transportation, when the animal is excited and the temperature variable, the practice of taking only one temperature before the injection of tuberculin is a bad one, and under these circumstances reliance on tuberculin is dangerous and is liable to lead to errors of a serious kind.

Second.—That in a very large proportion of cases of tuberculosis that react to tuberculin, the disease is extremely slight. In this condition the animal is not a source of danger to either human beings or other cattle.

Third.—Under favorable circumstances many such cases would entirely recover.

Fourth.—The reports and collections of statistics show that a large proportion of cases of tuberculosis in human beings occur in people who have recently moved into houses previously occupied by consumptives. This points to the direction that should be taken by sanitarians for measures looking to the prevention of tuberculosis in human beings. The same holds good in cattle. In the barns lie the greatest danger, and in pure air, sunlight, cleanliness and disinfection we have our sheet-anchors in the prevention of tuberculosis in dairy cattle.

And, in conclusion, it is the opinion of many practitioners in Massachusetts that frequent and careful physical examination with the use of tuberculin in suspicious cases, along with the thorough disinfection and renovation of infected premises, with greater attention to cleanliness and improved hygienic conditions would give better results and do more permanent good, besides being more practical and more economical than the wholesale compulsory use of tuberculin, and the total destruction of all animals that react to the test.

Respectfully presented,

JOHN M. PARKER,

Assist. State Secretary.

THE HORSE AS A PRODUCER OF ANTITOXINES.

BY OLOF SCHWARZKOPF, V.M.D.

A Paper Read before the U.S.V.M.A., at Des Moines, Iowa.

GENTLEMEN: At a time when we hear so much of the coming "horseless age," when the praise is sung of the "silent steed" and the horseless carriage parades our streets, then even the calm among us are joyous to see the horse once more in a new field of utility. Of the many usages to which the horse has been put by men for thousands of years, none has ever been loftier than its recent employment as a producer of antitoxines for some of the most dreaded of human diseases.

It will be known to you that the preparation of antitoxines is based upon the discoveries of Behring, who proved "that

the blood serum of an animal, rendered artificially immune against certain infectious diseases, if injected into another animal will protect the same against such disease or even cure him after infection." The weak point of this new theory is our lack of understanding of the nature of "immunity," inasmuch as there are several theories, notably those of Pasteur, Metschinkaff, Buchner, Behring, Roux and others. Each opposes the other, none fully explains his phenomena. We know, however, by empirical observation that certain animals, or classes of animals—are protected by nature—are "*naturally immune*" against particular diseases, which are fatal to others. We also know that a previous sickness of certain diseases of men and animals, such as scarlet fever, small-pox, yellow fever, influenza in horses, and many others, usually produce an "*acquired immunity*," at least for a variable length of time, against another attack of the same disease. Moreover, we know that we can render animals "artificially immune" against some infectious diseases by protective inoculation. Lately, we seem to have reached the point when "curative immunity" can be produced in time to counteract the infection and ward off the fatal toxic effects of certain germ diseases by the application of antitoxines. It is true that this new therapeutic applies at present only to a few diseases, diphtheria, tetanus and a few forms of septicæmia, such as puerperal fever of women, but it is no conjecture to conclude that others will be added in proportion as our knowledge of the pathogenic germ life becomes clearer and our laboratory methods improve in practicability and certainty of results.

The production of the various antitoxines is preceded by the preparation of their toxins in the bacteriological laboratory. This has been already described in our professional journals, and only for a better understanding of this paper I wish to recall to you the virulent bacilli of diphtheria and of tetanus, and the streptococcus of septic diseases are obtained from patients suffering from these diseases and cultivated on bouillon in large flasks in an incubator for several weeks, when they are filtered through a Chamberland filter, whereby the germs remain outside the filter, the filtrate being the original

fluid substrate charged with the toxine. The whole process is by no means simple, but calls for tedious work, painstaking accuracy and patience, and in spite of all of this may bring disappointments and unexpected difficulties, which must be overcome before further steps can be taken and success attained.

Having thus prepared the toxins, the animal for inoculation is selected, and it has been found that the horse is preferable to any other animal. He is most susceptible to these toxins, most tractable in the almost painless operation of remittent injections; he yields the largest amount of blood serum from one bleeding, aud most of all produces a therapeutic serum of the strongest immunizing value. The horses selected at our college for this purpose are healthy, strong and large animals of good disposition, between the ages of six and eight years, and they make a favorable impression upon those timid visitors who yet entertain doubts as to the value of serum therapeutics.

What interests us most, as veterinarians, is the effect which the injections of the different toxins have upon the organism of the horse. There are certain symptoms, such as the rise of temperature, which are common to all toxins; otherwise, however, they are so widely different that it is well to give a separate description of each.

The inoculation with *diphtheria-toxine* has been lately described by Dr. Gill, of New York, and I shall, therefore, only briefly mention our own method. As the best places for injection we select the thorax and flanks, the proximity to the extremities being avoided on account of subsequent œdematous swellings. A piece of skin of the size of a dollar is shaved, washed and disinfected with a solution of bichloride of mercury. The toxin is then drawn into a sterilized syringe of the capacity of 10-50 cc. and slowly injected subcutaneously. We commence with a small injection of 2 cc. of a weak toxin, and gradually increase during several weeks to 50 cc.

The effect of diphtheria-toxine upon the system of the horse is mainly a rise in temperature of 1½ to 3 degrees, a quickened circulation and accelerated respiration, but not in a very pro-

nounced type. From one to four hours after the injection a certain uneasiness of the horse is sometimes observed, but grave symptoms, as described by others, have not been seen by us. I think that much depends upon the surroundings of the horse, and that a suitable diet and comfortable and large box-stall prevents the horse from fully realizing the unpleasant feeling which no doubt he is undergoing. On the whole, however, the horses evidently enjoy the easy life with which they have been favored; they thrive and are easily fattened.

Very different is the effect produced by the injection of tetanus-toxine. To the skeptic there could hardly be a more convincing proof of the scientific correctness of the elimination of toxins during the progress of some germ diseases than to witness the effect of this toxine. We observed after the injection of 2 cc. within ten minutes very pronounced symptoms of ill feeling. A rise of temperature followed almost immediately, the pulse became stringy, and abdominal breathing set in. In about one hour the masseter became hardened and painful to touch, accompanied by a peculiar twitching of the muscles of the nose. In two and a half hours the temperature rose to 104.2°. Occasional grinding of the molar teeth was followed by outbreaks of great nervousness. At intervals the neck was thrown backward and upward and tetanic spasms of the muscles of the neck were noticed, resembling the symptoms observed in a horse that is trying to vomit. Later, light local spasms could be produced in any region by a simple touch. These symptoms lasted for about eight hours, when they gradually disappeared.

It is interesting to remark the effect of the subsequent injections of increasing quantity of toxine with a decreasing severity of symptoms. It is as if one could see the developing immunity, for the gradually increasing power of resistance of the horse against this toxine is very apparent. While our last injection was as large a dose as 25 cc., beyond a rise in temperature to 104° none of the symptoms, described as observed at the first injections, were noticed any more.

There is great likelihood, however, that all horses do not react with equal gravity at the first injection. We inoculated, experimentally, an old and hardened horse with 20 cc. of tox-

ine and anticipated very grave symptoms at first. For about one hour, however, the old horse stood motionless, exhibiting no reaction beyond a sudden rise in temperature of two degrees. Then he showed, gradually, uneasiness, with an occasional spasm of the neck and a peculiar arching of the back. Within two hours the temperature rose to 104.2°, the horse became extremely sensitive of touch, and pressure at the point of injection in the shoulder produced spasm of the muscles in that region. After three hours, being suddenly approached by a stableman, he fell backwards and died within fifteen minutes under tetanic convulsions.

Symptoms still different are produced by the injection of streptococcus-toxine. The main effect is an elevation of temperature of one to two or more degrees, which extends over the second or even the third day. The other symptoms become visible within three to four hours after injection and are not very marked, but none the less severe. The horse stands rather quiet, the head bowed downward, paying no attention to its surroundings, or to noise, or to food offered him. He remains so for hours at a time and he gives the impression of being a "pretty sick horse," as a visiting veterinarian expressed it the other day. After the fifth injection of this toxine the horse showed symptoms of colic pains, looking at his flanks and biting them occasionally.

These are our observations up to date, and, as far as I know, the effect of the tetanus-toxine and streptococcus-toxine upon the horse have not been published before. Inasmuch as these observations were conducted on a limited number of horses, they are subject to modification, but on the whole they will be found to be correct. The symptoms, as described, will greatly depend upon the preparation of the toxins, the germs producing different toxidity according to the soil on which they are cultivated. It is a matter of bacteriological experience to select a material of such chemical composition as will produce the highest toxidity, and much depends upon the skill of the bacteriologist. I think some of the toxins, if properly prepared, may be profitably used for demonstrative purposes for students, as the effect is so marked and characteristic.

After the horses have been inoculated with these toxines for a sufficient length of time to endure large doses, and after having fully recovered from the effect of the last injection, a sample of blood is drawn, and the serum separated under aseptic precautions and injected into experimental animals which have previously been infected. If by this experiment the serum proves to contain sufficient anti-toxic properties, large quantities of blood are drawn for the preparation of anti-toxine for therapeutic purposes.

As to the application of the tetanus-antitoxine and streptococcus-antitoxine in veterinary practice, very few, if any, trials have yet been made, as these new therapeutic agents are of so very recent date. We treated one horse, which was beyond hopes of recovery, with a 10 cc. dose of tetanus-antitoxine, merely to satisfy the owner, who wanted us to try anything to save the horse. Although this was all the quantity we had on hand and too small a dose, he informed us, the morning after the injection, that there was a noticeable improvement in the condition of the horse, but he died the same night. I report this negative result in order to dispel extreme expectation. As reports from human hospitals indicate, the early application of tetanus-antitoxine, if accompanied by proper surgical treatment of the wound from which the infection started, is bound to result in a cure; with the frequency and gravity of tetanus in the horse, we certainly look toward this new therapeutic agent with great hope, and it remains to be seen whether its success in veterinary practice will be equal to that obtained in human medicine.

Whatever may be the future of serum therapeutics, I should warn you against too much enthusiasm. Let us cautiously try these new remedies, if they are such, and not give a judgment off-hand, as has already been done by some. Success will alternate with failure, and the supporters and enemies will view it from their opposite standpoints. As far as veterinary science is concerned, it is certain to play an important factor in the development of serum therapeutics, and to us, as members of this science, it will add greater responsibilities and insure greater opportunities.

THE ACTION OF POISONS UPON ANIMALS.

By L. H. Friedburg, Ph.D., Professor of Chemistry and Toxicology at the American Veterinary College, &c.

With a few exceptions only, the toxic effect of a substance is greater when it is applied to wounds or hypodermically, than when it is administered per os. The exceptions are: croton oil, myronic acid (of mustard) and amygdalin. These exceptions are due to the fact that within the alimentary canal poisonous substances are split off from the three mentioned bodies, viz.: from the 1st, crotonolic acid; from 2d, ethereal mustard oil; from 3d, hydrocyanic or prussic acid, while in the hypodermic juices these splittings do not occur. Some relations of this difference in hypodermic or internal application are, for the horse:

Toxic action of	Per os	to	Hypodermically
Strychnin.....	1		5
Arsenic.....	10.0 to 15.0 grammes.		2.0 grammes.
Iodoform	1.0 grammes. (per Kilo. of body.)		0.5 " (per Kilo. of body.)

The action of the poison is always most severe in case of its injection into the trachea, the peritoneum or intravenous. Poisons do not by any means affect the different classes alike, and nothing is more erroneous than to draw conclusions in regard to the action of a poison upon man according to experiments performed upon animals. The position which the organism holds in the animal kingdom is all important. The rabbit tolerates more morphin than man, who is about fifty times heavier. The goat remains perfectly healthy after doses of lead, nicotin, cytisin, etc., which would fatally poison man. Dogs can partake of amygdalin without being injured, while it is fatal to rabbits. The hedgehog delights in doses of cantharides which would kill several people under agonizing pain; he is not killed by the bite of the most poisonous snake. The toad is almost non-sensitive to poison from digitalis, towards which the frog shows great sensitiveness. Our strongest cardiac poisons are without action upon

insects. The snail easily tolerates doses of strychnin which would kill a man instantly.

In regard to strychnin, we are in possession of very interesting facts showing that the sensitiveness of different animals towards this particular poison is quite different. On hypodermic injection, the fatal doses are, per kilogramme of the animal: rabbit, 0.6 mgrms.; dog and cat, 0.75 mgrms.; fox, 1.0 mgrms.; hedgehog and frog, 2.0 mgrms.; whitefish, 12.5 mgrms.; ringadder, 23.0 mgrms.; bat, 40.0 mgrms.

As a rule, newly born warm-blooded animals are but little susceptible to the influence of strychnin, so that they tolerate, relatively speaking, larger doses than adults. Horses allow, without detriment, hypodermic injections of 0.1 to 0.2 mgrms. per kilo., showing only temporary symptoms. Very old, weak horses, or such suffering from spinal marrow disease, will die after 0.3 mgrms. per kilo., hypodermic, while young horses, as a rule, tolerate this dose without danger. Every horse, however, will be killed within a short time by hypodermic injections of 0.4 mgrms. per kilo.

For one and the same species, the size of the fatal dose will vary with a number of other varying conditions. With the exception of very old age we can say that the resistance of the organism against a poison increases with the age. If a given poison has the action 1 upon a six-year-old horse, it will be for a one-year-old=$\frac{1}{2}$, for a half-year old, $\frac{1}{4}$, for a quarter-year-old=$\frac{1}{8}$, for a one-month-old=$\frac{1}{16}$, etc. There are, however, exceptions to this rule, since, e.g., young dogs will tolerate larger doses of calomel than older ones. As a general rule, one and the same dose of a poison acts less strongly upon a larger animal than upon a smaller one. If we put the horse or cattle=1, we have the following proportional numbers: sheep and goats, $\frac{1}{2}$; pigs, $\frac{1}{5}$; dogs (and man) $\frac{1}{10}$; cats and poultry, $\frac{1}{20}$. We practically use this knowledge in the destruction of animals, thus, e.g., in the use of prussic acid for this purpose. We can kill a 1,600 pound horse by means of one gramme of the concentrated, anhydrous prussic acid, (which the chemist has to prepare himself, it not being dispensed), while we must use 100 to 200 times this quantity if we want to

kill an elephant. We remark here, that since the final effect of prussic acid, viz., for a certain given quantity, is the same, whether it is given in the concentrated form or in any dilution whatever, the best method for the destruction of such large animals as, e.g., the elephant, is to mix the poison with an alcoholic beverage, whiskey or rum, and water and allow it to be drank.

It is scarcely necessary to mention, that the constitution, the individual disposition (idiosyncrasy), the condition of the stomach (filled or empty), the race and sex, are to be considered when we speak of the action of a poison, and this will differ accordingly.

Finally, there is the factor of adaptation. Arsenic, which is used as a cosmetic for horses, will gradually be tolerated in enormous doses. While the average fatal dose, as we have seen above, is 10 to 15 grammes internally, or 2.0 grammes when introduced into wounds; there are cases on record, where horses remained in good health after the application of 30 grammes. We must not forget, however, that the *form* in which the poison is applied has to be taken into consideration. Arsenious oxid solutions are by far more poisonous than solid arsenious oxid (white arsenic). It is similar in regard to substances when taken in powdered form, or when taken in lumps. In addition the commercial white arsenic is of different kinds. Some specimens are more soluble than others.

Considering all the above mentioned facts we should never forget that the particular organism acted upon has to be considered if we speak of the toxic effect of a certain substance.

The most varying chemical agencies may produce poison cases. We do not mean to speak of therapeutic errors, accidentally brought about, nor of criminal poisoning.

Interesting in this regard is lead. Some rivers which pass by lead works have been the cause of cattle poisoning. The external application of red lead salves has caused disturbances, for the reason that the animals licked off the salve from each other. Pails, railings, etc., newly painted with lead paint, have caused grave toxic cases. Concerning sugar of lead (lead acetate), it is fatal in the following progression: Pig and

dog, 10.0 to 25.0 grms.; sheep and goat, 20.0 to 25.0 grms.; cattle, 50.0 to 75.0 grms.; horse, 500.0 to 750.0 grms. Even the symptoms for chronic lead poisoning are different for cattle or horse. In the former we find marked disturbances of the alimentary tract, which are entirely absent in the horse, this latter showing asphyxia.

Mercury is medicinally used in two very different types of chemical combination, besides its application as such, finely disintegrated with some fat, in the form of gray mercury ointment. Cattle are exceedingly susceptible to the influence of this latter, while horses and dogs are exceedingly tolerant to it. While 30.0 grms. of gray ointment may cause grave toxic appearances on cattle, we have cases on record, one of a dog which swallowed 170.0 grms. at once without grave disturbances following, and of a horse which died only after 3240.0 grms. (more than three kilos.) had been applied within a month. Birds, on the other hand show great susceptibility.

Of the two different types of chemical combinations, the most poisonous is the mercuric chlorid (corrosive sublimate, $Hg\ Cl_2$), used as an antisepticum in surgery, etc. Here, also, cattle show decidedly greater susceptibility than horses. The fatal dose for cattle is 4.0 to 8.0 grms.; for the horse, 8.0 to 10.0 grms. For calomel (mercurous chlorid, $Hg_2\ Cl_2$), which is of much weaker toxic action, the relations are similar. While cattle suffer severely after 8.0 to 10.0 grms., horses will begin to do so after 20.0 grms.

But we have also a chemical compound for which these relations are reversed. This is tartar emetic. Horses may be called the most sensitive towards this substance; they will averagely die after 15.0 to 30.0 grms. Cattle, on the other hand, will not even show signs of a reaction after doses of 50.0 grms. had been administered.

ISOLATION OF TUBERCULOUS CATTLE BY SEPARATION.*

By JOHN FAUST, Poughkeepsie, N. Y.

The closing remarks of my paper last year on tuberculosis were, if we cannot get the aid of the Government, or

* Read at the meeting of the U. S. V. M. A., at Des Moines.

the expense would be too great, my advice was to separate the diseased from the well.

Now, gentlemen, I find an excellent experiment by separation conducted by Prof. W. Goodman, in Dorpat, reported in the monthly journal (*Praktische Thierheilkunde*, VI Band, 10 Heft). As the report appeared to me so valuable at the present time, in our efforts to stamp out tuberculosis, I will give a synopsis of this report.

I am thoroughly convinced that tuberculine is the only reliable diagnostic remedy for the separation of diseased from healthy cattle, conditioned only on the application of the proper dose and on the right measurement of temperature carefully taken before and after the injection has been given.

As early as 1891, I was permitted to use tuberculine as a diagnostic remedy in the battle against cattle tuberculosis on one of the largest herds in the government of Livland, thanks to the extreme kindness of the owner, Hon. August Von Sivers, of Manor Old Kusthof, near Dorpat. Of the results achieved at the first, as well as at later examinations, the following we will report:

The estate Old Kusthof consists of one principal farm, besides three others, separated only a few kilometers from each other. On each of these farms is situated a large, well arranged cattle barn, therefore Old Kusthof is admirably suited for the separation of animals, necessary after tuberculine injection.

The Old Kusthof herd is of high grade stock which Hon. Von Sivers has raised after thirteen years crossing of imported Jutland stock with the Livland home stock, and was considered in the best condition. In that whole region this herd was looked upon as being the healthiest, as it has been the rigid practice for years to separate any and all animals that showed any symptoms of tuberculosis.

In March and April, 1891, the first tuberbuline injections were made on 486 cattle, at which time we gave for steers 0.5, old cows 0.3, younger cows 0.2 and heifers 0.1, of tuberculine. The result was as follows:

No reaction,	189 animals,	- -	(38.80 per cent.)
Uncertain,	81 "	- -	(16.66 " ")
Strong reaction,	216 "	- -	(44.44 " ")
Total,	486		

The animals which had shown no reaction were again examined and another injection given. The older animals being injected in October and November, 1891, and the younger ones in April, 1892. The possibility that perhaps one or the other had received too small a quantity of tuberculine was the reason for a second examination, and the dose given at the second examination was 0.1 tuberculine greater than the first. The 189 animals which showed no reaction at the first examination, gave the following result at the second:

Healthy,	143	- -	(75.66 per cent.)
Sick,	39	- -	(20.63 " ")
Uncertain,	7	- -	(3.70 " ")
Total,	189		

The 81 animals which showed only a slight reaction at the first examination, gave the following result at a second investigation:

No reaction (healthy),	42	- -	(51.85 per cent.)
Strong " (sick),	36	- -	(44.69 " ")
Uncertain,	3	- -	(3.71 " ")
Total,	81		

The result of both investigations of this herd of 486 animals gave the following: 185 animals were healthy (38.06 per cent.); and 291 sick, 10 uncertain (61.93 per cent.)

The healthy animals were placed in the stable on the principal farm, after it had been thoroughly cleaned and disinfected with corrosive sublimate and well aired during the summer, as long as the pasture of the animals lasted. The important question for the management in regard to the diseased animals was: are the animals which have been found diseased by the tuberculine test of any further value for breeding purposes? The most natural thing to do would have been to have all slaughtered; but as the number of diseased animals

was so large, the entire separation of so large a number from breeding purposes, would have caused serious trouble in the working of the farm, and great loss to the management; therefore, Hon. Von Sivers decided that those cows which were found diseased by the tuberculine test should be placed on two of the smaller farms, but their calves brought to the principal farm, and here fed, with the offspring of the healthy animals, on the unboiled milk of the cows which were found healthy by the tuberculine test. After the weaning of the calves from the use of milk, to make room for the other young calves, they were taken from the principal farm and placed on the third smaller farm which had been reserved for the young stock. They were here placed in a new barn and here kept until the separation after the tuberculine test.

The use of milk from healthy cows which had shown no reaction in the tuberculine test, in the raising of calves, was done to avoid the danger of infection by milk, and, in fact, did give good results, as will be shown by comparing the tables of three succeeding years. The calves of these three years were, in the majority of cases, offspring of sick cows.

I.—The sixty-seven calves of the year 1891 did not receive milk from cows pronounced healthy by the tuberculine test. The injection, given in November, 1891 (dose .005–.01), resulted as follows:

Healthy,	39	(58.20 per cent.)
Sick,	26	(38.80 " ")
Uncertain,	2	(2.86 " ")
Total,	67	

II.—The calves of 1891 and 1892 were fed on the milk of healthy animals. The 109 animals which were injected in June, 1892 (dose 0.1 tuberculine), gave the following result:

Healthy,	89	(81.15 per cent.)
Sick,	10	(9.17 " ")
Uncertain,	10	(9.17 " ")
Total,	109	

III.—In 1892 and 1893 there were 78 calves, which had

also been fed on the milk of healthy animals. In October, 1893, they were injected (the dose being 0.2 per head). Result:

Healthy,	67	- -	(85.03 per cent.)
Sick,	7	- -	(8.93 " ")
Uncertain,	4	- -	(5.12 " ")
Total,	78		

Of this last table, which gives 67 healthy animals, or those which showed no reaction after the injection of tuberculine, only six were offspring of healthy parents. Sixty-one were offspring of sick cows or bulls, and after examination I found that of forty-two both parents were sick. Of eleven the father was healthy and the mother diseased, and of eight the father diseased and the mother healthy.

Of the seven calves shown to be diseased, by the test, we found that with one calf only the father, but with six calves both parents were tuberculous.

The calves of the year 1893–94, I have not as yet been able to inject; but it shall be attended to shortly, and I have good reason to hope, as these animals have been fed on the milk of healthy cows, that the result of the investigation will be highly satisfactory.

While the calves of the year 1891, which were fed on the milk of non-tested cows, show a percentage of 41.73 per cent. diseased and uncertain animals, the years 1891–92 and 1892–93, in which milk of healthy cows alone was used, show only 13.34 and 14.10 per cent. diseased and uncertain calves.

These figures give a sufficiently abundant reason to believe that for the extirpation of tuberculosis among the offspring, this is the only and safe thing to do.

After a number of years, when all diseased cows shall have been entirely separated, and only the calves of healthy cows be raised, the percentage of reacting animals will have been reduced to a minimum or will have entirely disappeared.

The stable in which these animals declared healthy by the tuberculine test are kept, makes a very striking and happy impression. The well rounded appearance and the smooth hair of the animals is striking; and the tell-tale cough, which

in other barns reserved for the diseased animal is heard repeatedly, cannot be heard here either at day or at night. And another thing is worth mentioning, that sickness (digestive disarrangement—the keeping back of the afterbirths) to which the diseased animals are very susceptible, very seldom appear among the healthy cattle. So also the calves, since they have been fed on the milk of healthy cows, enjoy much better health. Diarrhœa is one of the exceptional causes of sickness.

In review of the experiences made here, I think I can with certainty state that by increasing the number of healthy, and by gradually decreasing the number of diseased animals, especially, however, by the separation of diseased calves, the Kusthof herd will, in a few years, be entirely free from tuberculosis.

In regard to the economical value of a healthy herd to the owner I need not refer.

The principal advantage to him will be that the milk cows can be used as such to a much more advanced age, and can then be more easily fattened; and not, as is often the case with tuberculous cows, that, in the best lactative period, they fall away and die. Again the milk of such a herd will find much readier and more profitable sale in cities and towns, for it certainly is to be expected that parents will at last recognize of how great importance to the health of their children, not only so-called good, but healthy milk is.

According to my judgment, therefore, the first step in the direction of fighting tuberculosis among human beings is the restriction of tuberculosis in cattle. The nourishing of human beings with the product of tuberculous cows has caused more sickness and death than can easily be determined by statistics.

I hope, therefore, that the example of Hon. Von Sivers, to produce a healthy herd, will find recognition and many imitators.

POINTS IN PRACTICE.*

By JUNIUS A. WATTLES, D.V.S., Kansas City, Mo.

I have selected for my subject "Points in Practice," for several reasons, not the least of which is the belief that it will bring out a discussion of the several subjects touched upon, and the hope that we will all become gainers by absorbing the ideas of our fellow practitioners.

It is often said that a lazy man takes the most pains to devise easy methods, and you will please accept my acknowledgment now, that my desire to avoid anything like labor has become chronic, and the hardest labor performed by me is that of finding easy ways of doing things. This will explain to you why my subject is a practical, rather than a theoretical one, as to-day the theorist is the hardest worker in our ranks.

The wisdom of the world has been gained by close observation of minute things, and some of the most practical points are sometimes obtained from the humblest sources.

In our practice we are frequently called upon to perform the very commonplace operation of castrating a "Tom-cat," and from a student attending my lectures came the welcome intelligence, to me, of an easy manner of confinement during the operation.

Follow instructions closely: Take the right posterior limb of the animal between the third and fourth fingers of the right hand; the right anterior limb between the first and second fingers of the right hand; take the right ear between the thumb and first finger of the right hand; use the left hand in a similar manner, on the left side of the animal. Your assistant holding him firmly will bring the animal's back towards the assistant, and facing the operator, in which position the operation may be performed with "neatness and despatch," aided by the proper application of a sharp knife.

Men to-day do not accept new theories as positive facts until they are proven, and if in our practice an error is dis-

*A Paper read before the Missouri State Veterinary Medical Association.

covered in the methods of treatment that our text-books and preceptors have advocated, we are not doing ourselves justice unless we make an effort to rectify that error, and to try and find a more satisfactory way for ourselves and patrons.

It is a very common occurrence in our practice to be called upon to treat open joints in horses, and we can all justly consider these cases as stumbling-blocks in practice, as the majority of us would probably testify to very unsatisfactory results obtained in the greater number of cases, and, in hopes that some benefit may be derived from misfortune, this point has been selected for to-day.

When we first enter practice in this profession, we usually follow the lines laid down by our predecessors, when called to treat one of these cases, and we use hot water, and cold water, poultices and pounded ice, liniments and injections—with the unsatisfied feeling, that, if by any chance the poor animal lives, that it would be more than likely to have complete anchylosis of the affected joint. This in itself was sufficient inducement for me to cast about for something that would give better results, and the following are my conclusions:

Make it a positive rule never to inject anything into an open joint, unless there is a discharge of pus from the wound, and then, nothing but some bland, non-irritating substance, such as olive oil or lard oil. These can be used with an unsparing hand for the first treatment, to mechanically remove the accumulation of pus, and is not to be repeated unless absolutely necessary. When one is called before the care-taker has applied or injected some one of the usual liniments, there will be no reason for injecting anything into the wound.

It is necessary in all cases to provide a large pad of absorbent cotton; a long roller bandage, either cotton or flannel; also a plentiful supply of oxide of zinc seven parts, powdered wood charcoal one part. First apply to the wound a part of the powder, then cover the pad of cotton with a liberal quantity of the same; having the pad held against the wound by an assistant, apply the bandage rather snugly, and give positive orders to let it alone for twenty-four hours, when the

bandage may be removed carefully, without wetting it, and re-applied. You will observe that the most important part is to keep all wet applications away from the wound, and to not meddle with the dressing as long as the discharge does not wet through the bandage. In case of offensive odor, a small quantity of powdered permanganate of potash may be added to the powder.

It seems to me that the use of the trocar and canula in gastric flatulence is entirely uncalled for, and many of us will be obliged to confess our inability to use such an instrument. The necessity for using such an instrument, or, rather, the condition for which it would be used, can be met by a piece of rubber tubing one-half an inch in diameter, and eight feet long. Stand facing the animal; wet the tubing; pass it into the left nostril of the animal, keeping it against the septum nasi until the pharynx is reached; then against the roof of the pharynx, and it easily passes down the œsophagus, into the stomach, allowing the gas to escape, and furnishing a means to pass medicine directly into the stomach, if desired.

In cases of obstruction of any sort in the œsophagus, the same plan can be followed in passing the tubing. In obstruction from dry material, as oats, bran, or chopped feed of any sort, pass the tube down to the obstruction and then pour large quantities of water or oil down the tube; this will float the dry material up, and it is either passed out through the tube, or through the opposite nostril. In cases of obstruction from such articles as potatoes, apples or turnips, pour down the tube either olive or linseed oil, containing a full dose of chloroform. The oil lubricates the substance and the parts, and the anæsthetic relaxes the muscle fibres, allowing the obstacle to pass down into the stomach.

After the operation of œsophagotomy, food may be passed into the stomach until such time as the wound will permit the animal to take solid food, by using the same method.

It is sometimes necessary to anæsthetize our equine patients when performing operations, and one of the simplest and best arrangements that can be made for the purpose consists of a tube or cylinder of cloth, about six inches in diameter and fourteen inches long, open at both ends and provided

with a puckering string at each end. One end of the tube is passed over the nostrils, being carried into the mouth far enough so that the upper string will be above the canine teeth, in the male. The other end of the tube contains the sponge saturated with the anæsthetic, and is closed by the lower string, which can be loosened as required. This simple arrangement allows sufficient air to pass into the lungs through the mouth, in cases where chloroform is used, and a horse can be kept under its influence for a very long time, with very little danger to the patient.

Not only in city practice, but in country practice as well, are we called upon to treat wounds of the feet; usually produced by nail punctures, and supplemented by the addition of some caustic agent to the wound by some well-meaning person. It seems to me that the use of irritating applications in punctured wounds of the feet is not only uncalled for, but it is positively dangerous in the majority of cases, as they cauterize the external opening of the wound and imprison the pus that is almost sure to form if the opening is closed by irritants, and compel the pus to seek an outlet through the soft tissues, usually at the heel. My advice to my patron is: When a horse picks up a nail, stop at once and remove the nail; have the horseshoer enlarge the opening in the sole; have the foot immersed for fifteen minutes in hot water, if in winter, and if in summer, for an hour in cold water. My reason for using hot water in winter and cold in summer is because we can add comfort to the animal by so doing, and not from any theoretical idea. Cases treated in this manner have never, to my knowledge, reached the suppurative stage.

In cases where suppuration is established when called, my practice is to open the abscess at the coronet, unless it is already open, which is usually the case, and then enlarge the opening in the sole, as it is absolutely necessary to have free drainage to facilitate recovery. Formerly, like many others, my practice was to poultice, but this method of treatment, with many others, has been relegated to the "has been" corner, after it had added its quota of grey hair to my already bountiful crop, that soon followed my poulticing in an outbreak of furuncle, some years ago.

If you have not already satisfied yourselves on the subject, try my method of treating the suppurating diseases of the feet by injections of linseed oil, carbolic acid, and, where there is pain in the parts, the additon of chloroform.

Two years ago, at our meeting of this association in Clinton, my subject was "Fistulous Withers," and my theory at that time was, that it was a specific, contagious disease, and the same opinion still exists in my mind. But, leaving out the theoretical points, and considering nothing but the practical phases, it seems to me that after we had seen this very common disorder treated for a lifetime by caustics and the knife, with the poorest sort of success, that we are justified in discarding, as far as possible, the irrational and barbarous methods and casting about for a new one.

My observation convinces me that fistula is permanently cured by mild methods of treatment, and is aggravated by severe methods, and that a larger percentage of cases are cured by the very mildest applications, than are cured in any other way.

With this idea in mind, my plan is to use unlimited applications of cold water, and when the abscess has not pointed, or the formation of pus is limited, to use iodine in some one of its forms externally, and hypo-sulphite of soda internally. In the cases where there is an external opening, the cold water applications are the same, and the injections into the abscess are such as will produce the very least irritation, and are used after thoroughly flushing out the cavity with clean, cold water. My belief is that fistulous withers and malignant carbuncle of man are first cousins.

Another subject, and my effort to interest you is finished. My paper on the subject of "Hypodermic Injections in the Treatment of Ossific Diseases of the Joints" has brought to me many letters, and my suggestion to those who have not already made a trial of such treatment is to do so, and make some sort of a report at some of our meetings, as it is by an interchange of ideas that we are able to progress toward the highest point of perfection in our truly honorable, scientific and humane profession.

SYMPTOMATIC ANTHRAX.*

By JOHN FAUST, Poughkeepsie, N. Y.

Dr. M. R. Trumbower, Chairman of Committee on Diseases, requested me to write a paper on Tuberculosis, and in reply I stated that a paper on Symptomatic Anthrax would be in place; as to my recollection the Society never took any notice of the same, so I will endeavor to bring it before the society.

I wrote about a hundred letters to the profession, and received a small reply, which will be embodied in the report.

ANTHRAX FEVER—HISTORICAL.

Anthrax fever is undoubtedly the oldest known disease among animals. The Bible account of the plague in Egypt as given in Exodus 5—refers in the Sixth Plague, verse 9, to this disease. And in Leviticus, mention is made of the fact that the disease can be transmitted to human beings by wearing apparel. The disease described in the First Book of Homer's Illiad may be taken to represent anthrax fever. Homer has given us a more complete description of an epidemic of anthrax fever in the Ninth Book of Metamorphose, and also Plutarch, who reports that Rome in the year 740 B. C. was visited by a very severe epidemic of anthrax fever. Dionysius of Hali Karnassus, 488 B. C., and Livius, 425 B. C., gave examples of anthrax epidemic, when at first pasturing herds were affected, then the temple animals and from these the priests—then shepherds and farmers, and at last the whole population. In the writings of Lukres, 433 B. C., we first find the name *Ignis sacer* given for anthrax; in those of Columella—*Pastulla.* Virgil describes a contagious disease among sheep—which was carried to man by the wearing of the skins or the wool taken from skins of affected animals, and which caused blisters to form that went deep into the flesh. Pliny reports of a disease of this kind in Gaul at the time of the migrations of the nations.

*A Paper read before the U. S. V. M. A., at Des Moines.

Arabian doctors describe anthrax fever as *Persian Firo.* Hezeray, 996 B. C., first used the designation *Ignis St. Antonii.* Johann Wierus describes in the second half of the 16th century different epidemics in Italy. At that time, the Senate of Venice forbade the selling of beef under penalty of death. Athanesius Kirchner describes in 1617 a disease among oxen, which passed to human beings, so that sixty thousand persons died of it. In 1662, anthrax of the tongue prevailed in violent form in Lyons, France—as also in France in 1710 and 1731.

In 1690, according to Ramazzini, anthrax was prevalent in Padua among oxen and swine. In 1713, anthrax appeared in Germany, first near Augsburg, also in Hungary; 1733, in Poland, Schlesier, Saxony; and 1731 and 1757 in France, as gloss anthrax in carbuncle of the tongue among almost all domestic animals (horses, mules, cattle, sheep, swine, deer, dogs, chickens, fish), as well as among men; 1755 and 1761 in Franken; 1758 and 1759 in Finland and Russia; 1774 in Guadaloupe (America). Chabert showed, in 1780, the similarity and unity of the different forms of anthrax fexer, which he named and classified. This classification, on the whole, has been maintained up to the present time. In 1805 Kausch published an excellent description of anthrax fever, in which, however, he denies its contagiousness. The epidemics of anthrax fever in 1807, 1810, 1819 and 1827 are particularly to be mentioned. After that time a decrease may be reported. Anthrax among sheep was more especially investigated by Delafond and Gerlach (1845)—while Delafond does not recognize the contagiousness of the disease, Gerlach proved it experimentally. In 1850, Heusinger published a complete report of anthrax fever, showing it historically and geographically, in which he accepted anthrax as a *malaria neurosa.* The most important advancement in the study of anthrax was made in the second half of this century. In 1855 Pollendor published his observations, made in 1849, when he detected in the blood of diseased cattle an infinite number of small rods. Independent of this research, Davaine (Paris) also saw these rods in 1850, and Brauill (Dorpat) in 1857. Brauill also found these rods in the blood of diseased cattle during life,

and used them as a diagnostic and prognostic force, but he denied that they represented the anthrax poison. Only in 1863, Davaine proclaimed them as the cause of anthrax fever and called them bacteria—immediately, however, a storm of opposition was raised. The first to call these rods bacillæ was Cohn, who also surmised the presence of dauersporen.

To R. Koch credit must be given for having shown the development of dauersporen from the rods, and the transformation of the sporen to bacilli. He also purely bred the bacilli, and has given the biology of the bacillus anthracis.

Of very great scientific and practical interest has been the preventive vaccination against anthrax fever, first introduced by Toussaint, and afterwards propagated by Pasteur and others.

THE EXISTENCE OF ANTHRAX FEVER AND BLACKLEG IN THE UNITED STATES.

Dr. J. Hall, of Falls City, Nebraska, writes under date of July 28th, 1895, that an outbreak of blackleg occurred on the farm of Mr. J. Siretity in April, 1895. They were young stock, being fatted for market, all about one and one-half years old, in fair condition. These cattle were bought in Kansas, Missouri and in Nebraska. It attacked the Kansas cattle first, the Missouri cattle next, and last the Nebraska cattle—twenty dead out of a herd of sixty.

He further states of an outbreak of anthrax fever in horses, about eight miles from Falls City, in a drove of forty horses, out of which four died. The remaining number were placed on higher ground and better pasture.

Dr. R. R. Dinwiddie, of Fayetteville, Arkansas, says there have been reported to him two outbreaks of blackleg, with small losses; also an outbreak of anthrax fever among mules some six years ago.

Dr. Pearson, of Philadelphia, states that there have been from time to time outbreaks of anthrax and blackleg in the State of Pennsylvania, but never to a great extent or very serious. Blackleg appears occasionally in the western part Pennsylvania, and the doctor knows of ten localities where

there have been outbreaks of anthrax during the past few years.

Dr. J. H. Hollingsworth & Son, under date of July 24th, states that there are frequent outbreaks in and around Utica. He also states he has some herds which have been vaccinated, and with splendid results. In one herd especially there have been no outbreaks in five years, while farmers on both sides of him have suffered losses.

Dr. W. Huff, of Rome, N. Y., states there are frequent outbreaks in and around his district.

Dr. Tait Butler, of Starkville, Miss., states that there is considerable anthrax in Missouri, principally in the bottom lands of the Mississippi, but occasionally in other districts, especially in the Yazoo Delta, which is between the Yazoo and Mississippi rivers. Horses and mules are more or less affected every year, and occasionally it becomes enzootic. In his section it is confined almost exclusively to cattle.

The doctor has never seen a case of blackleg in Mississippi.

Dr. J. W. Connoway, of Columbia, Mo., states that they have occasional outbreaks of blackleg.

Dr. W. F. Crowe, of Devil's Lake, North Dakota, states that for two years they had outbreaks of anthrax, suffering a loss of about thirty-five head.

Dr. E. Brainard, of Memphis, Missouri, reports cases of blackleg.

Dr. R. A. Archibald, of Sacramento, Cal., says splenic apoplexy is very prevalent in the central and southern portions of the State. Anthrax is seldom seen in Northern California, but it does break out occasionally.

To show the prophylactic value of vaccination, I will give an article written by me and published in our monthly journals; also an article from the German journal, *Pratische Thierkeilkunde*, edited by Prof. Fröhner and Prof. Kitt:

For twenty-nine years, to my personal knowledge, splenic apoplexia and splenic fever have occurred every year up to 1886 in a streak of swampy land about two miles long, and Mr. Noxon, one of the sufferers, says he lost $30,000 worth

of cattle in that period. All imaginable diseases were suspected by professionals and non-professionals. I held post mortems year after year, and always found the same thing—splenic fever or apoplexia.

In the year 1885 the suspicion of poisoning was so strong that Mr. Noxon wanted a chemical analysis of the stomach. As I knew that would have been money spent for nothing, I proposed that Professor Liautard make a post mortem examination. After the post mortem he stated to the owner that the whole cause was splenic fever.

A great many medicines were used with no offect. I advocated to the owners the vaccination with anthrax virus. I even went so far as to offer to do it for nothing if it was a failure.

The following is a history of the different herds that came under my care in 1886:

On July 3d was called to see a cow belonging to Mr. Hoppe; she died before I reached her. The second cow was found dead in the lot. On July 10th was called to the third cow and put her under treatment for splenic fever (my record does not show what treatment). In twelve hours, to all appearances, she was well, but in ten hours more she died, and post mortem examination proved it to be splenic fever. The spleen weighed eight and a half pounds.

Mr. Hoppe's neighbor lost his only cow. They were the only cows these men owned.

On July 17th I was called to Mr. E. Lyons' farm. Ten days previous to my call he lost one Jersey cow. On July 16th the second cow was taken sick, to which Dr. Thompson was called and diagnosed it as dysentery. The cow died shortly after he left. On July 17th two more cows died without warning or medical care. The same day I found nine sick cows. My diagnosis was splenic fever. I was not prepared for any treatment that night. On the 18th I made a post mortem on cows that died on the 17th and found them to have had typical cases of splenic fever. I then separated the sick from the well.

The following are the symptoms and treatment of this herd:

July 18, 10:30 A. M.:

No. 1, temp. 107 deg., very restless all night.
" 2, " 106 "
" 3, " 108 "
" 4, " 103½ " restless; died at 5 P. M.
" 5, " 107½ "
" 6, " 101¾ " sinking; died at 7 P. M.
" 7, " 105¾ " breathing very hard.
" 8, " 108 "
" 9, " 104½ "

The treatment in all these cases was fluid extract eucalyptus glob., half ounce doses, and arsenious album. 1-100, three-drachm doses, alternating every two hours.

July 19, 10:30 A. M.:

No. 1, temp. 104¾ deg., very restless all night.
" 2, " 106½ "
" 3, " 103 "
" 5, " 106⅓ "
" 7, " 103 " breathing almost normal.
" 8, " 105 "
" 9, " 101⅓

The same treatment continued, they all eat, drink and ruminate same.

July 20, 12 M.:

No. 1, temp. 101 deg., very restless.
" 2, " 102½ " very drowsy and stiff.
" 3, " 101 "
" 5, " 102⅓ "
" 7, " 101¼ " breathing normal.
" 8, " 100¼ "
" 9, " 101 "

Continued same treatment every three hours.

July 31, 3:30 P.M.—Temperature of all the cows is normal. They all eat and drink well and have a fair flow of milk. No medicine.

On July 25th I inoculated nine cows and one calf with Chauveau's virus received from Professor Liautard. The following is the method of vaccination: Clip the hair on in-

side of thin part of the ear. Make a small incision with a sharp-pointed bistoury. Clean off the small quantity of blood and inject with hypodermic syringe two drops of the virus.

On July 26th cow No. 3 had a very alarmingly high temperature; at 11:30 A. M. temperature 107°; at 7 P. M. temperature 106°. All the rest of the cows had a slight rise in temperature. On July 27th cow No. 3's temperature was 102½°, and, to all appearances, well.

The ears of all the cows where the inoculation was made were swelled to a more or less extent.

The following is the history of the herd of cattle owned by the Hudson River State Hospital:

On the 27th of March, 1887, I was called to make a post mortem examination on a young cow which had died the night previous. Results: On removing the skin the tissues appeared to be filled with dark hæmorrhagic spots; the spleen very much enlarged and of a dark color; the abdomen containing a quantity of dark serum; the kidneys were dark and ecchymosed. The statement was made by Dr. Cleveland that they had lost from ten to twelve head every year at different periods in the same manner for a number of years.

I proposed the vaccination of the entire herd with Chauveau's virus, to which the doctors of the hospital agreed. On the 31st day of March I vaccinated the entire herd of forty-four head.

The temperature after vaccination rose from 1 to 6 degrees, with slight swelling of the ears—one was very badly swollen.

Of those vaccinated two died after a lapse of four years and four months of splenic appoplexia,—fortunately in a place where no cattle have been kept since.

I also vaccinated the herd of Mrs. Wiley, consisting of thirty-three head, and Mr. J. Rose's herd of sixteen head. There was no table of temperature kept of these two herds.

Since 1887 there have been but two cases of splenic appoplexia (the two of the Hudson State Hospital) in the whole district.

Every year for over thirty years this disease has claimed its victims.

This is certainly very gratifying for the use of the prophylactic treatment of this disease.

Extract taken from the yearly report of veterinary work done in Hungary, compiled by Prof. Dr. F. Hutyra, in Buda Pesth, under the direction of the Government Agricultural Department:

During the year 1893 296 horses, 2,836 cattle and 1,092 sheep died of anthrax fever.

The results of the vaccination in Hungary for the year 1893 are as follows:

I.—*Preventive vaccination* against anthrax fever.

The Pasteur-Chamberland laboratory of Buda Pesth delivered anthrax vaccine from October, 1886, to the close of 1893, as per tabulated statement:

In 1886, for	106	horses,	900	cattle and	3,500	sheep
1887, "	180	"	7,296	"	45,003	"
1888, "		"	10,500	"	39,430	"
1889, "	337	"	16,073	"	37,375	"
1890, "	2,039	"	21,339	"	178,542	"
1891, "	2,828	"	36,457	"	274,811	"
1892, "	3,836	"	54,633	"	366,310	"
1893, "	6,430	"	91,016	"	361,505	"

Concerning the vaccination of horses reports have been received from 68 farms for 2,573 vaccinated horses. Of these no loss was reported between the first and second vaccinations; but within twelve days after the second vaccination four horses died of anthrax fever, while during the rest of the year the remaining horses were perfectly free from fever.

The total loss of vaccinated horses was 4—0.15 per cent.

Taking the sum total of vaccinated horses (6,665) between 1889 and 1893 we have the following result:

Loss after the first vaccination,	5—0.07	per cent.
" " second "	6—0.09	"
" during the year	4—0.06	"
	15—0.22	"

Reports received in regard to the vaccination of cattle from 257 farms for 35,967 vaccinated cattle give the following result:

Died of anthrax fever:

After the first vaccination,	4	—0.01 per cent.
" second "	5	—0.01 "
During the year, -	5	—0.01 "
	15	—0.03 "

The sum total of reports received for 87,430 vaccinated cattle between 1886 and 1893 gives the following result:

Loss after first vaccination,	35	—0.04 per cent.
" second "	37	—0.03 "
During the year, -	64	—0.07 "
Total loss,	127	—0.14

Reports were received in regard to the vaccination of sheep from 130 farms for 153,717 vaccinated sheep as follows:

Died of anthrax fever:

After the first vaccination,	193	—0.13 per cent.
" second "	89	—0.05 "
During the year, -	570	—0.37 "
Total loss,	851	—0.55

Take the sum total of reported cases for 1889–1893, making 388,743 vaccinated sheep, we have the following result:

Loss after the first vaccination,	1,534	—0.49 per cent.
" second "	760	—0.19 "
During the year, - -	2,668	—0.68 "
Total loss,	5,012	—1.36

II.—*Preventive vaccination against blackleg.*

Against blackleg on one farm in Comitate, Kelees, 75 cattle, and in Comitate, Pesth, Pilis, Kiskien, on nine farms, 2,348 cattle were vaccinated.

Of the vaccinated cattle two died immediately after the first vaccination, and during the year three more, making a total of 5, or 0.20 per cent.

Before the vaccination, during the same year, on the same farms, 69 or 2.70 per cent. died of blackleg.

AN IMPROVED METHOD OF PLANTAR NEUROTOMY.

By M. H. McKillip, M.D., V.S.

A Paper Read before the U. S. V. M. A., at Des Moines.

It is well known to all practitioners who perform a large number of operations of plantar neurotomy that its practical result is sometimes unsatisfactory on account of an early uniting of the nerve-ends, with subsequent recurrence of feeling and lameness, no matter how long a section of nerve may have been removed. To overcome this annoying result I have experimentally tried to perfect the *modns operandi* in different ways, and the result has been so satisfactory that I think it expedient to report it for the benefit of those who are called upon to perform this operation.

As the technique of the operation is familiar to you, I shall only refer to the difference of my methods. First of all I have devised a certain preparation of the limb for the operation, which is quite essential. Three days before operating, a cantharides blister is applied over the seat of operation. This is washed off after twenty-four hours, the cuticle removed and vaseline applied to the part. The object of this procedure is to secure a clean field for operation and rapid union. The blister removes the hair and cuticle, doing away with the hair stubbles always left by the clipper, which are an irritating agent. It leaves a clean, smooth surface and prepares, as nearly as possible, for an aseptic operation and dressing. It excites inflammation of the skin, and the slight swelling and increased circulation promote a union by first intention, a result seldom obtained by the old methods, especially in animals with a thin skin. There is a tendency to produce a little more hemorrhage during incision, but if any should object to this it is easily prevented by the application of a simple tourniquet.

The operation itself is performed as usual until the nerve has been dissected and cut on its upper end. Then it is dissected downwards to a length of one and a half inches and firmly drawn up with forceps by an assistant, while the operator applies a silk ligature to the lowest part of the distal end,

tying it as securely as possible with a surgeon's knot. The dissected nerve-trunk is cut above the ligature and the silk is allowed to hang out of the lower part of the incision to the length of about one inch. No stitches being used, a cotton bandage, saturated with a solution of bichloride of mercury is applied to the fetlock, which draws firmly together the edges of the incision. Over this is again laid an antiseptic flannel bandage. Within three days after the operation the bandages are removed, when the wound will be found to have united by first intention, with the exception of the lower end, out of which the ligature is now carefully and easily removed. When the ligature comes off, the nerve-end is cicatrized, a granulating process is obviated, and the union of the nerve-ends thus made impossible. The parts are dressed and the bandages replaced in order to support the newly united tissues. Shower baths for a few days have been found of good service, and in from five to ten days the horse is again ready for work—a result which can hardly be obtained by the old methods.

Of about one hundred horses so operated upon by me since February last, no report has been made so far of an unsatisfactory result, and all those cases which could be kept under observation have proved a decided success, not only from a surgical view, but also from the practical results obtained.

CONTRIBUTION TO THE STUDY OF SWINE PLAGUE, HOG CHOLERA AND PNEUMOENTERITIS OF SWINE.

By W. Silberschmidt, M.D., Assistant to the Hygiene Institute, Zurich.*

[*Continued from page* 335.]

EFFECTS OF THE TOXINE.

As we have said before, the microbes of *hog cholera* and of *swine plague* are killed by being kept a certain length of time to a temperature of 58°. To this effect I heated the culture or the blood received in a glass tube closed at both ends, with the alcoholic lamp, in a water bath kept at an even constant temperature.

*Translated from the Annales de l'Institut Pasteur.

The planting of the blood or of the culture thus heated remains sterile, and the injection of small doses of this liquid ($\frac{1}{2}$ cc.) produces no trouble in the rabbit. But by opposition, the injection of larger doses is not so harmless; it may produce death by intoxication.

Let us consider, first, the toxine of *swine plague*, to which I gave special attention. My experiments justify me to entirely endorse those of Selander; but as I have not injected as large quantities of toxic blood as he did, I have not to record as rapid a case of death. An intravenous injection of 2 to 4 cc. of blood kills the rabbit in from 12 to 24 hours. There are individual differences; while the virus kills surely in a given time, some animals resist better than others the action of toxine.

Two kinds of intoxication must be recognized—the acute and the chronic. In the first, one observes the same morbid symptoms following the injection of virus; the latter, after a variable time, produces death by cachexia.

For *swine plague* the results have been noticeably the same, no matter what liquid was injected: heated blood, blood sterilized with thymic acid or formic aldehyde, bouillon cultures or those of emulsionized gelosis in bouillon and sterilized by heat; or, again, cultures free from their microbes by filtration through the Pasteur bougie.

The quantities injected have varied between $\frac{1}{10}$ and 10 cc. The cultures were supported in a larger dose than the blood, and contained less toxine. And, again, blood sterilized with thymic acid has shown itself more toxic than heated blood, and it has seemed to me that the repeated or longer action of heat diminished the toxic power.

The largest number of intoxicated rabbits died with cachexia. Quantities of toxic liquid not exceeding 1 cc. were generally well tolerated; in one case, however, 1 cc. of blood has produced death in 20 hours. The injection of 2 cc. of blood, or of 3 to 5 cc. of sterilized culture, produced a noticeable diminution in the weight, varying from a quarter to a third of that of the general weight of the rabbit. The maximum of this diminution is observed after a few days (1 to 3)

after the injection; then, if the animal resists, it gradually and in a variable length of time increases and returns to its initial weight. In other times, the diminution is progressive and brings on death in from 8 to 15 days, or one month, and even later. I mention a few experiments:

No. 47.—1k-600; injection of 2 cc. blood sterilized by heat; death in less than 24 hours; blood and cultures sterile.

No. 63.—1k-750; injection, 2½ cc. blood sterilized with heat; death in less than 16 hours; blood and cultures sterile.

No. 86.—2ks; injection, 1 cc. blood sterilized by heat, and addition of 2 drops of Gram solution; death in less than 20 hours; blood and cultures sterile.

No. 213.—Injection of 4 cc. of blood, diluted in about its volume of water, and sterilized with thymic acid; death in 12 to 16 hours; blood and cultures sterile.

No. 51.—1k-960; injection of 3 cc. of blood sterilized by heat, with addition of 6 drops of solution of Gram. The next day the weight is of 1k-810; the third day of 1k-660; the ninth day of 1k-810.

No. 9.—1k-575; 4 injections made 5 to 6 days apart, each of 1 to 1½ cc. of blood diluted half in water and sterilized at 58°. After the fourth injection the rabbit weighed 1k-785.

No. 54.—1k-835; injection of 2½ cc. of blood sterilized at 58°. The next day the rabbit weighs 1k-690. Seven days later, 1k-900. Several injections of doses successively weaker (½ to 1 cc.) are supported without symptoms.

No. 199.—2k-100; injection of 4 cc. buillon cultures filtrated with Pasteur bougie. The third day the rabbit weighs 1k-870; the fourth, 1k-775; the tenth, 1k-760, and five days later, 1k-570. He dies in the night of the twentieth day. The blood and cultures remain sterile; the spleen is very small.

No. 145.—1k-900; three successive injections of 1 cc. of heated culture at 60°; slight diminution of the weight. After the third injection, 1k-870; five days later, new injection of 4 cc. of culture, and kept in the autoclast 1¼ months, and afterward sterilized at 58°. The rabbit weighs but 1k-575 on the 8th day, and 1k-510 the 13th day; then it gradually improves and has regained its weight towards the end of a month. It still enjoys good health.

No. 183.—1k-710; injection of 1 cc. of culture filtrated with Pasteur bougie; the next day 1k-550, then 1k-670, and after 12 days 1k-725. A second injection made then of 2 cc. with same culture is followed by diminution of weight, 1k-545, but the animal resists, and after 15 days is well.

No. 237.—2k-150; injection of 9 cc. of culture filtrated with Pasteur bougie. The 4th day 1k-945, the 7th 1k-745, the 18th 1-980, after one month 1k-895, after 45 days 1-615. The rabbit died on the 57th day after the inoculation; spleen very small; blood and culture sterile.

No. 195.—2ks; subcutaneous injection of 12 cc. of culture heated seventeen days for five minutes at 120°; the 2d day 1k-655, the 4th 1k-860, the 11th 1k-725, the 21st 1k-810, after a month 2ks.

No. 338.—1k-910; subcutaneous injection of 11 cc. of culture sterilized at 120° during five minutes; during 11 days the weight remains between 1k-520 and 1k-650; the rabbit was not observed afterwards.

No. 339.—1k-610; subcutaneous injection of 4 cc. of the same culture sterilized at 120° during five minutes; the next day the rabbit weighs 1k-440, the 5th 1k-335, the 11th 1k-125; he is moribund and observed no longer.

The injections that are not specified were made in the marginal vein of the ear.

In a few cases I have added from 2 to 6 drops of Gram solution to the liquid to be injected, with the object to have a vaccination more efficacious, but it was not so; small quantities of iodine are well tolerated.

For *hog cholera*, the results are analogous; but, as in the beginning, the microbes did not possess a constant virulency; it has happened that some rabbits supported large doses of blood or of sterilized culture, while others exhibited serious symptoms with small quantities of toxine. The sterilization with the thymic acid was longer and less certain than for *swine plague*. Here are some experiments:

No. 218.—Intravenous injection of 4 cc. of diluted blood (2 cc. nearly of pure blood) sterilized with thymic acid; death in 36 hours; blood and cultures sterile.

No. 262.—Injection of $2\frac{1}{4}$ cc. diluted blood sterilized with thymic acid; death in about 12 hours; blood and cultures sterile.

No. 140.—2k-160; injection of 3 cc. of culture heated at 58°; death in $2\frac{1}{2}$ days; reduction of weight of 450 grammes; blood and cultures sterile.

No. 131.—1k-810; injection of $\frac{3}{4}$ cc. of blood sterilized by heat; the 3d day 1k-540, the 12th 1k-690, the 21st 1k-840.

No. 268.—1k-720; injection of $\frac{1}{2}$ cc. of blood sterilized by contact with thymic acid; the next day a second injection of 1 cc.; great reduction of weight; the 3d day 1k-515, the 6th 1k-400, the 8th 1k-375, the 16th 1k-415, the 21st 1k-480, the 28th 1k-650, and the 34th 1k-800.

No. 146.—1k-640; injection of 2 cc. of culture on gelosis diluted in bouillon and sterilized. Initial weight the 8th day; 28 days after the first injection the rabbit receives $2\frac{1}{2}$ cc. of culture also sterilized by heat; the day after he weighs 1k-535; 8 days later 1k-450; a third injection made ten days after the second brings the weight down to 1k-450, and the animal requires more than a month (40 days) to recover his former weight.

No. 254.—1k-700; injection of 1 cc. of blood sterilized with thymic acid; the third day 1k-860; second injection of 1 cc. with a slight reduction of weight, 1k-760; a third injection of the same blood is made eight days later (weight 1k-835); the third day after, 1k-600; this weight remains, and the rabbit dies nine days after the last inoculation. Small spleen; blood and cultures sterile.

The two experiments last described show how little the organism gets accustomed to the toxine. We can resume the results in the following propositions:

1st.—In general, the blood and cultures of *swine plague* and of *hog cholera* that I have used have given manifestations of intoxication in the rabbit starting from a dose of $\frac{1}{2}$ cc. upward.

2d.—The phenomena of intoxication are of three orders:

(*a*)—Acute intoxication and death in from 24 to 48 hours, with symptoms analogous to those obtained with injections of virulent cultures.

(*b*)—Chronic intoxication, followed with reduction in flesh and cachexia, ending by death in a length of time varying from between a few days to one and two months; at post mortem no lesions, only a very small spleen.

(*c*)—Chronic intoxication, followed by the return of the animal to health after a variable length of time.

3d.—Weak doses to 1 cc. are ordinarily well tolerated without giving rise to any noticeable troubles.

4th.—I have not been able to observe that rabbits become accustomed to toxine; rabbits that had received several injections of small quantities of toxine reduced in weight when the dose was increased.

5th.—The blood of animals dead by an injection of one of the microbes sterilized by heat and by thymic acid is more toxic than equal quantities of sterilized cultures.

6th.—Cultures filtrated with the Pasteur bougie, or heated for a few minutes to 110° or 120°, do not lose their toxic action, but bring on symptoms analogous to those produced by cultures heated to 58°.

7th.—The properties of toxines do not allow the differentiation of *hog cholera* and *swine plague*.

VACCINATION AGAINST SWINE PLAGUE AND AGAINST HOG CHOLERA.

Animals that have resisted to several injections of toxine have shown themselves refractory to the inoculation of the viruses.

For *swine plague* I have succeeded in vaccinating rabbits by several ways, viz., by repeated injections of—

1st.—Blood sterilized by heat (58 to 60°) or by thymic acid.

2d.—Cultures sterilized by heat (58 to 60°).

3d.—Cultures filtrated with Pasteur bougie.

Besides, I have obtained partial, though evident, results with—

4th.—Cultures sterilized at 120°.

5th.—Blood of vaccinated animals.

Following are some examples in support of these data:

No. 9.—Weight the 28–IV, 1k-575; four injections of 5½ cc. of diluted blood sterilized at 58°; the 28–V, a month after the first injection, he receives $\frac{1}{10}$ cc. of virulent culture. The witness dies in less than 24 hours.

Second injection of trial the 6th–VI; the witness dies also in less than 24 hours. The vaccinated rabbit, after a few days, has an abscess at the point of inoculation, treated by incision and cauterization with the red cautery.

Third trial the 26–VII with similar result, though one month and a half has elapsed since the last injection; the witness dies. In these two months the subject has gained 480 grammes.

No. 54.—Weight the 26–VII, 1k-835; four injections, in all 5½ cc. of blood sterilized by heat. The first trial takes place the 18–VIII, two days after the fourth injection; the witness dies in less than 16 hours; the vaccinated animal resists. After being injected again, in three sittings, 2½ cc. of heated blood, he is submitted to another trial the 28–X and resists it, having, it is true, an abscess that I cauterize 12 days later; he weighed then 2ks-250—an increase of 400 grammes.

No. 25.—Weight the 3d–IV, 1k-730; six injectlons, altogether 8 cc. of bouillon culture and gelosed culture diluted in sterilized bouillon; the injections are made far apart at first, on account of the reduction in weight. First trial the 17–XII, 13 days after the last injection of toxine; the rabbit weighs 2ks-450; the witness dies in less than 18 hours; two other trials are equally well tolerated.

No. 224.—Weight the 2–III, 1k-960; four injections, altogether 18 cc. of bouillon cultures sterilized at 58 to 60°; first trial the 29–IV, the rabbit has a small abscess which opens of itself; the witness dies in less than 10 hours; three new trials the 17–V, 10–VI and 14–VI.

No. 183.—Weight 17–I, 1k-710; three injections, altogether 5½ cc. of bouillon culture filtrated with Pasteur bougie; the rabbit stands two trials the 19–II and the 14–III, after receiving 2½ cc. of filtrated culture the 2–III. The 23–III he weighed 1k-925.

No. 197.—Weight the 29–I, 1k-600; four injections, altogether 8 cc. of diluted blood (about half of water) sterilized with thymic acid; trial the 10–III; the witness dies in less than 16 hours; two other trials the 19–IV and 2–V, with witness in the last. The 17–V the rabbit weighs 2ks-300.

No. 198.—Weight the 29–I, 1k-620; three injections, altogether 9 cc. of diluted blood sterilized with thymic acid; three trials the 19–II, 27–II and 7–III; the witness injected on the third trial dies in less than 10 hours. The rabbit weighs 2ks–100 the 13–III.

No. 195.—Weight the 27–I, 2ks; injection of 12 cc. of culture heated at 120° during five minutes; the rabbit has regained his initial weight the 26–II; he is, like most of the rabbits to test, injected with $\frac{1}{10}$ cc. of virulent culture under the skin of

the ear; large abscess, and death in the night of the 6th of March. At post mortem, on same side of injected ear, purulent pleurisy, and purulent collections in the left lung. The sowing from the blood and from one of the abscesses gives pure cultures of *swine plague*.

I wish to remark that most of the animals have presented during the duration of the vaccination and after the test injection a noticeable increase in their initial weight, which proves that the toxine has no bad, lasting effect on the organism.

The experiments of vaccination with the serum will be considered further on.

As to *hog cholera*, the results of the vaccinations are far from being as brilliant; this is specially due to the fact that at the beginning the virulency of the microbe was much less active, and, besides, uncertain, as well as to its toxicity. Later on the results were better.

No. 132.—Weight the 10–I, 1k-910; five injections of blood and cultures sterilized by heat (5½ cc. of blood and 6 cc. of cultures); the rabbit resists the 1–II to a first test, which kills the witness, but he dies after a second injection of virus the 23–II in less than 24 hours. Pure cultures of *hog cholera*.

No. 139.—Weight the 21–XI, 2ks-160; four injections, altogether 8 cc. of sterilized culture; tested the 19–II, the rabbit, which weighed 2ks-240, dies in less than 16 hours. The blood gives pure culture.

No. 146.—Weight the 30–XI, 1k-640; after seven injections of sterilized culture, altogether 18 cc., the rabbit dies the 31–III, in less than 24 hours after the injection of test.

No. 173.—Weight the 6–I, 1k-750; receives 19 cc. of sterilized culture in seven injections, and weighs 2k-370 the 31–V, date of the trial. The witness dies in 18 hours, while the subject vaccinated lasts about 60 hours. Pure cultures.

No. 178.—Weight the 13–I, 1k-600; seven injections, altogether 34 cc. of sterilized cultures, some by heat, others by filtration with Pasteur bougie; test the 27–III, weight 1k-990; the witness dies in 48 hours; the rabbit treated during nine days, 1–IV; he then survived more than seven days. At the post mortem were found, an abscess which had given rise to a large tumefaction of the ear and of the neck, right purulent pleurisy, small superficial abscesses in both lungs, left lung extensively hepatized; cultures with the pus and blood are positive, though these last were weak.

No. 260.—Weight the 3–IV, 1k-860; six injections, altogether 8 cc. blood sterilized at 60°; first test, the 12–VI, weight 2ks-430; the witness dies in 24 hours, the subject treated continues to do well; a second injection of *hog cholera* culture is well supported the 19–VII.

No. 311.—Weight the 18–V, 1k-680; four injections, in all 7½ cc. of diluted blood sterilized by long contact with thymic acid; test injection the 22–VI, weight 1k-900; no noticeable effects. The witness dies in less than 18 hours.

No. 314.—Weight the 21-V, 1k-720; six injections, in all 6½ cc. of sterilized blood at 58°. Test injection, made the 13-VI, kills the witness in 18 hours, and gives rise in the vaccinated rabbit to a small abscess, which remains localized.

Vaccination against *hog cholera* is possible, and takes place as that of *swine plague*. The cultures have not given me good results, as they were not virulent enough, and probably did not contain, after sterilization, enough toxines.

To resume, rabbits are liable to be vaccinated against *swine plague* and *hog cholera*. For the former I have obtained—thanks to the virulency of the bacillus—good vaccination by repeated injections of sterilized blood and of cultures heated at 58° or filtrated. The injected quantity each time must be weak, 1 cc. and even less for the blood, ½ cc. for the cultures. These doses are supported without sensible symptoms, and it is possible to have the injections repeated at short intervals, and to thus obtain a rapid immunity against the virus. If, on the contrary, one injects a too large quantity of toxine, the animal reduces considerably in weight, often dies, and if it resists, requires a long time to recuperate to its initial weight. And besides, the degree of vaccination does not depend directly on the absolute quantity of injected toxine, as it was proved by several observations; rabbits were vaccinated in ten days by a daily injection of $\frac{1}{10}$ to $\frac{2}{10}$ cc. of sterilized blood, when the same quantity, injected at once, gave rise to great reduction in flesh and failed to vaccinate. Before injecting another dose, one must wait until the animal has regained its initial weight, or he runs the risk of seeing him die, or at all events to see him lose still more flesh; also the vaccination takes longer to be perfect. As a general rule, rabbits have stood the test inoculation after having received 3 to 5 cc. of sterile blood; for the cultures, the necessary quantity to vaccinate is greater, and varies in proportions, though in two cases 7 cc. proved sufficient. It is clearly evident that quantities of cultures heated at 100° and 120° must be much larger to produce the same effect. To the point of view of the vaccinatiou of the rabbit, there are, then, only differences of quantity between *hog cholera* and *swine plague*.

It remains for me to speak of the vaccination of a dog

against *swine plague*—a small animal, weighing about 5 kilogrammes:

After a first injection of $\frac{1}{8}$ cc. of virulent culture of *swine plague*, made the 22–II, the animal became very ill; the next day he remained lying on his side; does not eat, and grunts instead of barking; its temperature rises from 38.4 to 40°; this serious condition lasts three days. The 28-II I opened an abscess, the size of a nut, at the point of inoculation, and a reddish pus escapes, containing many leucocytes and microbes (I obtained pure culture with them); the dog soon recovers. The 3–III the abscess is closed; two days later a second subcutaneous inoculation is made of $\frac{6}{10}$ cc. of bouillon culture of *swine plague*. The dog seems a little out of sorts for a few days following, but soon recovers without other abscess.

The third injection of 1.5 cc. of culture is made the 12–III; and as the animal remains in good health, receives 1.25 cc. of virulnet blood the 14–III, and seems sick the next day; eight days later, the 22–III, fifth injection of 3 cc. of bouillon culture; the 24–III, sixth inoculation of 2.5 cc. of virulent blood. Following this, the dog is sick for several days, and has an abscess analogous to the first, which is opened the 27–III. The 30–III, seventh injection of 2.5 cc. of virulent blood; very ill the next day, the dog eats nothing, but little by little recuperates and seems well the 5–IV. The eighth injection is made the 19–IV; the animal receives 3 cc. of bouillon culture, which he tolerates without morbid manifestations.

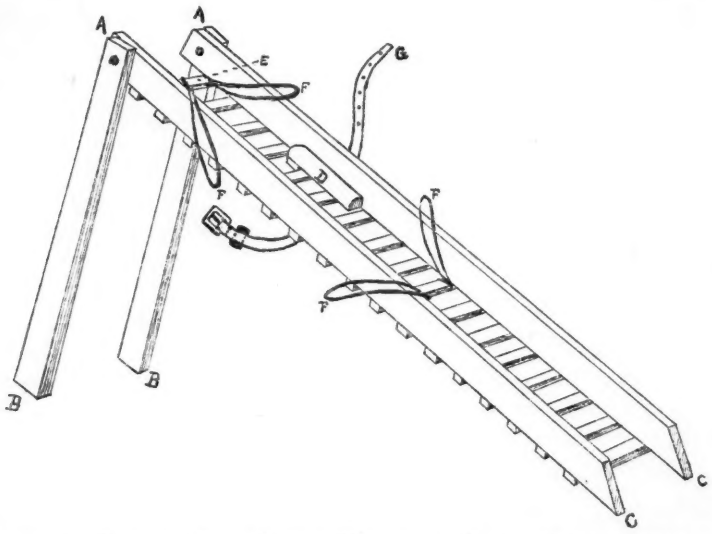
This experiment proves that dogs are sensitive to *swine plague* to a lesser degree than rabbits; that they get used to it easier and can stand doses of virus relatively very large. At equal quantity, or even at an inferior one, the blood has produced symptoms more serious than the cultures; and it is not possible to tell if this is due to its greater virulency or its greater toxicity.

(*To be continued.*)

CONFINING BITCHES FOR SPAYING.

By Prof. M. H. Reynolds, University of Minnesota.

I was once asked to operate on a bitch in the country, where I could not even have the advantage of a table or a carpenter's bench. The only thing in sight was a ladder, which was leaned, trough up, against the barn, on the shady side. The subject was tied by the hind feet to a round as high as the operator's shoulder, and the front feet stretched down and tied to another round, the bitch on her back in the trough of the ladder. This proved so satisfactory that, on



my return home, the above illustrated apparatus was made at once, and has since been used in quite a number of operations with great satisfaction. It may be used to confine any small animal, and will confine them in any position that may reasonably be desired.

The pieces A C are 2x4 and 7 ft. 10 in. long; the pieces A B are 5 ft. 8 in. of 2x4; the pieces which correspond to steps of ladder are 1x2 and 12 in. long, 3 and $3\frac{3}{4}$ in. apart; the pieces D, of which there should be four, are used for blocking in the subject; they are 12 in. long, 2x3, and rounded off at the corners. F F are strips of strong muslin, 2 in. wide, 18 in. long, and are doubled into a loop, which is again doubled at the loop end and slipped over the limbs just above the feet. We also use a large strap (G), which is buckled around the pieces A C and the breast of the subject after she is in position. It will readily be seen that the subject may thus be rigidly confined, for either flank or median line operation; the intestines will drop downward and out of the way except with very plump and very fat pugs; the subject is at a convenient height for the operator; and, finally, the apparatus may be moved so as to get best light from any direction.

Suggestions for the Operation.—When the subject arrives several days before the operation, it is a good plan to keep

on milk or at least fluid diet, and give a generous dose of oil twenty-four to thirty-six hours before the operation, to simplify the operation and to rid the intestines of a variety of germs and their toxines, with the fæces, thus cleaning out the intestines, and securing more nearly an intestinal asepsis.

We prefer to use morphia instead of an anæsthetic, and give rather small doses, one-twelfth to one-quarter grain, hypodermically, twenty minutes before beginning the operation; operate in the median line; make the incision extending downward or anteriorly to the umbilicus. The cut should be exactly in the median line and be made at one sweep—not a little hole to be pieced out by several hacks. Have two dishes of antiseptic fluid (bichloride 1.2000), one of which is used first for cleansing the abdominal surface to a generous distance around the site of operation, and is then put aside; the other is to be hot and used for sponging the wound. Introduce the forefinger, and then, instead of hunting for the ovary, slide the finger down the internal abdominal wall and hook it around the horn of uterus on either side; pull gently and there will be no trouble in finding the ovary. The ovaries may be removed with scissors, in the case of young subjects that have never been in heat, and with ecraseur, torsion forceps or, better still, by a strong and clean finger or thumb nail. Blood should be removed as thoroughly as possible from the cavity, for good appearances anyhow, although a little blood does not seem to be a very serious matter so far as recovery is concerned, if we may judge from the fairly good results which some operators get in practice who seem very careless in this respect. For suture material, I prefer in the order named, wire, silkworm gut and ordinary surgeons' silk, and usually insert three sutures to close the wound. Bandages of all descriptions are nuisances and useless bother.

In case the operator feels doubtful about securing union by first intention, he may apply a light dressing of powdered boracic acid or a combination of boracic and salicylic acids to the wound surface before closing. Neither of these is irritating and both are soluble. The former is more readily soluble, and should perhaps have the preference.

When the wound has been closed and cleaned, apply an old-fashioned dressing of pine tar and turpentine, 6 to 1. The turpentine is added only to make the tar a little more fluid, and the mixture gives a dressing which protects the wound fairly well from outside factors and yet will readily allow the escape of fluids should such collect. As a further protection againt flies, dust a generous coating of iodoform or iodoform diluted with boracic acid over the tar mixture. Allow fluid diet for the first two or three days, and gradually come on to the more solid and bulky. Give a daily application of iodoform to the operation site; remove the end sutures on the seventh or eighth day if all is well, and the middle one on the tenth day.

VETERINARY COLLEGES OF NORTH AMERICA.

The present month will witness the opening of every veterinary college on this continent, and, as they have become quite numerous, we present herewith a general résumé of the salient points connected with each of them. We have classified them according to the number of terms which are necessary to be attended previous to graduation, and have omitted adjunct chairs and collateral branches. We have omitted Cornell, for the reason that she does not become a veterinary college until next year, and the California school because we have not accurate data upon the subject.

The list will be found to contain the fundamental branches taught, with the teacher in charge of each; the fees charged; and the address of the executive officer of each institution.

THREE-TERM SCHOOLS.

AMERICAN VETERINARY COLLEGE, 139-141 W. 54th St., New York City.

Fundamental Faculty.—A. Liautard, M.D., V.M., Professor of Anatomy, Operative Surgery, Jurisprudence and Sanitary Medicine. J. B. Stein, Professor of Physiology. James L. Robertson, M.D., D.V.S., Professor of Theory and Practice and Clinical Medicine. Chas. A. Doremus, M.D., Ph.D., Emeritus Professor of Chemistry. Roscoe R. Bell, D.V.S., Professor of Therapeutics, Materia Medica and Hygiene. John Elmer Ryder, D.V.S., Professor of Obstetrics and Cattle Pathology. Wm. J. Coates, M.D., D.V.S., Professor of Operative Surgery and Physical Diagnosis, and Clinical

Lecturer to Hospital of College. L. H. Friedburg, Ph.D., Professor of Chemistry and Toxicology.

Fees.—Tuition, $100 each year; matriculation, $5 each year; dissection, $10; graduation, $25.

Address A. Liautard, M.D., V.M., Dean, 141 West 54th St., New York City.

NEW YORK COLLEGE OF VETERINARY SURGEONS, 154 E. 57th St., N. Y. City.

Fundamental Faculty.—H. D. Gill, V.S., Professor of Theory and Practice of Veterinary Medicine. George P. Biggs, M.D., Professor of Physiology. John H. Huddleston, M.D., Professor of General and Comparative Pathology. R. S. Huidekoper, M.D., Veterinarian, Professor of Anatomy and Practice of Surgery. R. W. Hickman, Ph.G., V.M.D., Professor of Diseases of Cattle and Obstetrics. Jno. A. Mandel, Professor of Chemistry. August C. Hasslock, V.S., Professor of Materia Medica and Therapeutics.

Fees.—Tuition, $75 a year; matriculation, $5 each year; dissection, $10 first and second year; histology, $5 first and second year; examination, $10 second year, $15 third year.

Address Harry D. Gill, Dean, 154 East 57th St., New York City.

HARVARD UNIVERSITY—SCHOOL OF VETERINARY MEDICINE.
50 Village Street, Boston, Mass.

Fundamental Faculty.—Chas. P. Lyman, F.R.C.V.S., Professor of Veterinary Medicine. Henry P. Bowditch, M.D., Professor of Physiology. J. Collins Warren, M.D., Professor of Surgery. Edward S. Wood, M.D., Professor of Chemistry. Frederick H. Osgood, B.S., M.R.C.V.S., Professor of Veterinary Surgery, aud Surgeon in charge of Hospital. Henry F. Leonard, M.D., M.D.V., Instructor in Anatomy. Kenelm Winslow, B.A.S., M.D.V., M.D., Assistant Professor of Veterinary Therapeutics.

Fees.—Tuition, $150 a year (if in two payments, at the first, $90, at the second, $60). No charge for matriculation nor graduation.

Address Chas. P. Lyman, F.R.C.V.S., Dean, 50 Village St., Boston, Mass.

UNIVERSITY OF PENNSYLVANIA—DEPARTMENT OF VETERINARY MEDICINE.
36th and Pine Sts., Philadelphia, Pa.

Fundamental Faculty.—Horatio C. Wood, M.D., LL.D., Professor of Materia Medica, Pharmacy and General Therapeutics. Theo. G. Wormley, M.D., LL.D., Professor of Chemistry and Toxicology. John Guiteras, M.D., Professor of General Pathology and Morbid Anatomy. Jno. Marshall, M.D., Nat. Sc. D., Assistant Professor of Chemistry. Simon J. J. Harger, V.M.D., Professor of Veterinary Anatomy and Zootechnics Leonard Pearson, B.S., V.M.D., Professor of Theory and Practice of Veterinary Medicine. Jno. W. Adams, A.B., V.M.D.. Assistant Professor of Veterinary Surgery and Obstetrics. Wm. S. Carter, M.D., Assistant Professor of Comparative Physiology.

Fees.—Tuition, $100 each year; matriculation, $5, first year only; dissecting material, $5 first and second year; material for surgery, third year, $8.

Address Jno. Marshall, M.D., Nat.Sc.D., Dean, 36th and Pine Sts., Phila., Pa.

McKILLIP VETERINARY COLLEGE, 1639 Wabash Avenue, Chicago, Ill.

Fundamental Faculty.—Olof Schwarzkopf, V.M.D., Professor of Theory and Practice, Histology, Pathology, Helminthology, Bacteriology, and Sanitary Science. M. H. McKillip, M.D.,V.S., Professor of Clinical and Operative Surgery. James M. Wright, D.V.S., Professor of Cattle Pathology, Embryology, Obstetrics, and Canine

Practice. L. A. Merillat, V.S., Professor of Anatomy and Dental Surgery. W. H. Rumpf, A.M., M.D., Professor of Materia Medica and Natural History. Otto Folin, B.S., Professor of Chemistry and Physics. J. H. Honan, M.D., D.V.S., Professor of Physiology.

Fees.—Tuition, $100 each year; matriculation, $5; graduation, $10.

Address Olof Schwarzkopf, V.M.D., Dean, 1639 Wabash Ave., Chicago, Ill.

McGILL UNIVERSITY—FACULTY OF COMPARATIVE MEDICINE AND VETERINARY SCIENCE, 6 Union Ave., Montreal, Canada.

Fundamental Faculty.—Professors D. McEachran, F.R.C.V.S., V.S. Edin., D.V.S., M. C. Baker, D.V.S., Charles McEachran, D.V.S. Associate Professors G. P. Girdwood, M.D., Geo. Wilkins, M.D., D. P. Penhallow, B.Sc., Wesley Mills, M.A., M.D., D.V.S., A. D. Blockader, B.A., M.D.. J. G. Adams, M.A., M.D.

Fees.—Tuition, $60 each year; matriculation, $5 each year; graduation, $20.

Address Charles McEachran, Registrar, 6 Union Ave., Montreal, Canada.

KANSAS CITY VETERINARY COLLEGE, 310 East Twelfth St., Kansas City, Mo.

(Three-Year Graded Course, after January 1, 1896.)

Fundamental Faculty.—Sesco Stewart, M.D., D.V.M., Professor of Principles and Practice of Medicine. Jno. Forbes, M.R.C.V.S., Professor of Surgery. Sidney L. Hunter, Professor of Materia Medica and Therapeutics. Wm. C. Barth, V.S., Professor of Obstetrics. Leon Rosenwold, M.D., Professor of Pathology. Claude C. Hamilton, M.D., Ph.G., Professor of Chemistry. Silas L. Brooking, M.D., D.V.S., Professor of Comparative Anatomy and Physiology. Junius H. Wattles, D.V.S., Professor of Anatomy, Lameness, Shoeing and Physical Diagnosis.

Fees.—Tuition, $100 first and second year; matriculation, $5, first year only; dissection, each year, $10; chemistry, each year, $10; graduation, $10.

Address Junius H. Wattles, D.V.S., Secretary, 310 E. Twelfth St., Kansas City, Mo.

TWO-TERM SCHOOLS.

CHICAGO VETERINARY COLLEGE, 2537 and 2539 State St., Chicago, Ill.

Fundamental Faculty.—A. H. Baker, M.D.C., Professor of Theory and Practice of Veterinary Medicine, and of Principles and Practice of Veterinary Surgery and Obstetrics. Joseph Hughes, M.R.C.V.S., Professor of Veterinary Anatomy, Special and Comparative. Finley Ellingwood, M.D., Professor of Chemistry. Arthur R. Edwards, M.D., Professor of General Pathology and Microscopic Anatomy. G. S. Baker, D.V.S., Professor of Special and Comparative Physiology and Histology. E. L. Quitman, M.D.C., Professor of Materia Medica and Toxicology. M. R. Trumbower, D.V.S., Professor of Cattle Pathology and Meat and Milk Inspection.

Fees.—Tuition, $140 first year, $135 second year; graduation, $10.

Address Joseph Hughes, M.R.C.V.S., Secretary, 2537 and 2539 State St., Chi., Ill.

OHIO VETERINARY COLLEGE, 14 and 16 Gano St., Cincinnati, O.

Fundamental Faculty.—Thomas King, D.V.S., Professor of Theory and Practice of Veterinary Medicine. Herman Boehme, D.V.S., Professor of Anatomy. Frederick Kebler, A.B., M.D., Professor of Pathology and Bacteriology. Wm. Dickore, A.M., Ph.D., Professor of Chemistry. J. Francis Jones, B.Sc., V.S., M.D., Professor of Materia Medica and Therapeutics. J. M. Shaller, M.D., Professor of Physiology. Louis P. Cook, D.V.S., Professor of Surgery. A. H. Logan, V.S., Professor of Obstetrics and Cattle Pathology.

Fees.—Tuition, $60 each year; matriculation, first year only, $5; graduation, $10.
Address Thomas King, D.V.S., 14 and 16 Gano St., Cincinnati, Ohio.

ONTARIO VETERINARY COLLEGE, 40 to 46 Temperance St., Toronto, Canada.

Fundamental Faculty.—Andrew Smith, V.S., F.R.C.V.S., Professor of Diseases of Domestic Animals. J. Thorburn, M.D., Professor of Materia Medica. G. A. Peters, M.B., F.R.C.S., Professor of Animal Physiology. C. Gordon Richardson, F.G.S., Professor of Chemistry. J. T. Duncan, M.D., V.S., Professor of Anatomy. J. Caven, M.D., L.R.C.P., Professor of Pathology and Normal Histology. C. H. Sweetapple, Professor of Obstetrics and Diseases of Cattle.

Fees.—Tuition, $60 each session; dissecting and registration, $5 each year; graduation, $10.

Address Andrew Smith, F.R.C.V.S., Principal, Toronto, Canada.

NATIONAL VETERINARY COLLEGE, New Jersey Ave. and O St., N.W., Wash., D.C.

Fundamental Faculty.—D. E. Salmon, D.V.M., H.A.R.C.V.S., Professor of Sanitary Medicine, Control and Eradication of Contagious Diseases and Meat Inspection. John Lockwood, D.V.S., Professor of Theory and Practice and Clinical Medicine. A. M. Farrington, B.Sc., B.V.A., Professor of Obstetrics and Zootechnics. Chas. F. Dawson, M.D., D.V.S., Professor of Physiology. J. W. Hodges, M.D., Professor of Materia Medica and Therapeutics. Veranus A. Moore, B.Sc., M.D., Professor of Pathology. F. L. Kilborne, B.V.S., Professor of Surgery. Edwin R. Hodge, M.D., Professor of Chemistry and Toxicology. Wm. P. Fink, D.V.S., Professor of Anatomy.

Fees.—Tuition and dissecting, $110 each year; matriculation, first year only, $5; graduation, $10.

Address Charles F. Dawson, M.D., D.V.S., Secretary, New Jersey Ave. and O St., N.W., Washington, D. C.

UNITED STATES COLLEGE OF VETERINARY SURGEONS, 222 C St., N. W., Washington, D. C.

Fundamental Faculty.—C. Barnwell Robinson, V.S., Professor of Theory and Practice and Sanitary Medicine. Chas. H. Ford, D.V.S., Professor of Dental Surgery. R. Alexander Dunn, D.V.S., Professor of Materia Medica and Toxicology. Harry W. Acheson, D.V.S., Professor of Cattle Pathology and Obstetrics. J. H. Adamson, D.V.S., Professor of Anatomy. Chas. H. Emmons, M.D., Ph.D., Professor of Physiology and Histology. Wm. A. Herrick, Ph.D., Professor of Chemistry.

Fees.—Tuition, $65 each session; matriculation, $5 each session.

Address C. Barnwell Robinson, V.S., Dean, 222 C St., N.W., Washington, D.C.

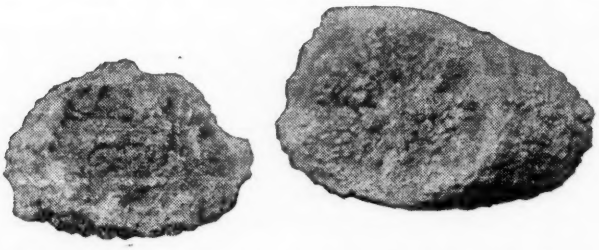
REPORTS OF CASES.

VESICAL CALCULUS.

By C. J. Britton, M.D.C.

The enclosed photo was taken of a cystic calculus removed from a thirteen-year-old sorrel gelding, used on our streets for many years as a family animal. The calculus was removed from the bladder on the 15th of this month (July), and on the

17th the horse was out on his usual round of driving. The



calculus weighed six ounces, and by examining the photo it can be seen that the rough edges caused considerable laceration.

HYDROCHLORIC ACID AND PEPSIN FOR NECROSIS.

By H. NEHER, D.V.S., Veterinarian to Metropolitan Street Railway Co., N. Y.

Subject, a large bay gelding, nine years old, sixteen hands high, weight 1700 pounds. Used for switching cars in depot. Got the right hind leg in the cable slot, between the hock and ankle; the tissues were torn to the bone on either side of canon; periosteum also torn away from bone. The slot had to be wedged open so as to draw the leg back far enough to an opening large enough to allow hoof to come out. I had him removed to my hospital, put in a large box stall, the bedding being very fine straw, so as not to hinder his movements while going around the stall. I applied carbolized cotton to the parts and wrapped them with a bandage, "not too tight," and left orders to have the part wet occasionally with water medicated with tinct. opii, which was done. In a few days I noticed the bone began to change color, the color running to a distinct margin, which, in time, exfoliated. I then thought I would use hydrochloric acid and pepsin, with the following result: I first took fifteen drops of acid to three ounces of water and sponged the parts thoroughly; waited fifteen or twenty minutes, then took the pepsin in proportion of fifteen grains to three ounces of water, injected the parts well, sponged thoroughly and wrapped up in cotton soaked in the the pepsin solution, and applied bandages. Continued this treatment for ten or twelve days; had the animal walked as

soon as fit. The parts healed splendidly, and to-day he is as strong as ever performing his work.

I will say the pepsin acts only on the diseased tissue by digesting it; has no action on the healthy tissue.

AMPUTATION OF RECTUM—COMPLETE RECOVERY.

By the Same.

Subject, a bay mare, six years old, fifteen and one-half hands high, weight 1050 pounds. Used for drawing street cars. Taken lame, laid up from work, with orders to take away feed and use hay and bran mashes, as she was of very full habit. She recovered from lameness, exercised, and, while being exercised, was taken with azoturia; put in slings, but could not stand; taken out, placed in a very large box stall, well bedded, given a six drachm ball of aloes with two drachms of calomel, had hot blankets applied over loins, and given oat-meal gruel as a drink. Urine had to be taken from her, dark, nearly black. Had her turned every three hours. The next day she seemed easier, and in three days was on her feet, but very weak behind; but she persisted in standing and walking as best she could. I noticed on the fourth day her rectum was protruding, kept coming out until it was fully ten inches from the anus, hung down and completely covered the vulva. I tried reduction, it was of no use; put it back and out it would come. I concluded to amputate it. I prepared some strong, waxed, linen thread, and with a large needle stitched all around from the inside of the gut, *as it hung down*, to the edge of the anus, taking good, deep stitches in the skin; *at the edge of the anus* the stitches were interrupted, and left so I could tighten the next day. I was careful not to shut off the circulation entirely at first, but the next day I tightened them a little more and so on for four or five days, at the end of which time I amputated the gut close to the stitches, and the parts went back, stitches and all. I let the stitches go, did not take them out. The parts healed all right. Stitches all gone. Mare made a good recovery and is as fat and handy as ever, and doing her full work every day.

RUPTURE OF THE STOMACH.

By Wm. V. Lusk, Veterinary Surgeon, 2d U. S. Cavalry, Fort Wingate, N. M.

A gray gelding (never known to be sick), eight years old, sixteen hands high, and used for cavalry purposes, was given his usual allowance of grain at 5 A.M., and watered and tied on the picket line at 6 A.M. About 10 A.M. he broke loose and began to run violently around the yard. In turning a corner he slipped and fell heavily to the ground. He was then caught and tied up, apparently none the worse for the fall. About two hours later he was found standing, with his head down, vomiting a mass of masticated food and showing signs of colicy pains. Pulse, temperature and respiration normal. After a careful examination the case was diagnosed as rupture of the stomach. He was placed in a box stall, and, for fear that the diagnosis might possibly be wrong, was treated for impaction of the stomach, which gave no relief. Temperature and pulse began to increase, and cold, clammy sweats broke out in patches over the body. Aconite was given to reduce temperature, with no beneficial result. Everything possible was done to relieve the animal's sufferings until about 10 P.M. the same day, when he expired under convulsions. The vomiting continued, at intervals, until about one hour before death.

Post mortem examination revealed a rent about ten inches long in the greater curvature of the stomach and parallel with it. The edges of the rupture were terribly inflamed and swollen. The stomach contained about one quart of masticated food and a small quantity of fluid. The gastric walls, except near the rupture, appeared perfectly healthy. About two quarts of the stomach's contents were found in the peritoneal cavity, where it had produced considerable inflammation in the parts with which it had come in contact. No tympany or bloating whatever was present.

In my opinion, this case goes to show that vomition can take place even after the gastric walls have ruptured.

LARGE OVARIAN TUMOR IN A MARE.

By J. J. Smith, D.V.S., Chambersburg, Pa.

The subject was a bay mare, which I was called to see on March 3d, and which was suffering from colicy pains, her abdomen being very much distended. Anodyne medication was valueless, and she died the following day. Post mortem examination revealed a large ovarian tumor, which was of the size of a bushel basket, though I could not obtain its weight on account of lack of facilities. It was cystic in nature and provided with numerous large blood vessels.

URINARY CALCULUS IN A MULE.

By the Same.

On November 11th I was called to see a mule, which exhibited the symptoms of difficult urination, and which had been under treatment for about three days for kidney trouble.

Upon examination I found a large hard substance lodged in the urethra about half way between the bladder and the end of the penis, evidently a calculus. The animal was cast, the calculus cut down upon and removed, when it was found to be about two inches long by three quarters of an inch in diameter, very rough and of cinder-like appearance; a catheter was then introduced into the urethra and kept in place for two weeks, after which a solid sound was introduced once a day for a week. The wound received the ordinary antiseptic dressings, giving nitrate of potash in drinking water. The animal made a good recovery.

TRAUMATISM OF THE HEART.

By the Same.

On August 3d I was called to see a cow belonging to Mr. George Storkes. The animal was showing symptoms of slight pain, pulse thready, temperature a little above normal, respiration normal, complete anorexia and every now and then emitting a moan. She received a dose of physic, with an opiate combined, and the next day appeared to be better;

the bowels were moving freely, and the appetite had improved, as she began to partake sparingly of her food. The next day I was again sent for, and found my patient much worse, and that night she died.

On post mortem examination the side of the heart presented an abcess about the size of a pint measure, filled with pus, and containing in its center a piece of wire six inches long and about as thick as an ordinary rib of an umbrella, bent for three quarters of an inch at a right angle. Its course could be traced by a black streak it had left, through the tissues along side of the œsophagus, through the diaphragm and coats of the stomach.

The peculiarity of the case is as to how it was possible for the wire to take the course it did with one end bent as described.

DYSTOKIA DUE TO UTERINE HERNIA.

By the Same.

April 10th I was called to see a cow, the property of Mr. Joseph Jones, and found the animal in labor. Upon the right side was seen a large hernia, which, upon vaginal examination, the fœtus in utero was found to have gravitated in that direction, and hence the diagnosis was made of a hysterocele, or uterine hernia.

Upon external manipulation it was found to be unreducible, owing to the smallness of the opening through the abdominal muscles, which was about three inches in diameter. The operation of gastro-hysterotomy was then decided upon; the animal received an ounce of chloral hydrate, and was cast on the left side. A vertical incision, about eight inches long, was then made through the skin and coats of the uterus, and the fœtus removed, which, though small, was perfect. After the removal of the fœtal membranes, the two edges of the uterus were sewed together and replaced into the abdominal cavity, after which the external opening was closed with sutures and dressed in the usual manner.

The animal made a good recovery and continued to milk for about a year and a half, at which time she was sold for beef.

SOCIETY MEETINGS.

PENNSYLVANIA STATE VETERINARY MEDICAL ASSOCIATION.

The semi-annual meeting was held at the Mountain House, Cresson Springs, Pa., Sept. 3d, 1895, and was called to order by President Pearson.

In the absence of the Recording Secretary, Dr. W. G. Benner, a motion was made that Dr. F. S. Allen, the Corresponding Secretary, act also as Recording Secretary, which was carried.

At roll-call the following members were found to be present: Drs. Helmer, Hart, Pearson, J. B. Raynor, T. B. Raynor, Noack, Timberman and Allen.

The minutes were read and approved, with the correction that a list of all the members dropped at the last meeting for non-payment of dues be added to the minutes.

There were three new members proposed for admission, as follows: Drs. Geo. W. Bell, Geo. B. Jobson and Daniel C. Gearhart.

In the absence of Dr. J. C. McNeil, of the Board of Censors, the President appointed Dr. Jacob Helmer to act with the Board, after which the meeting adjourned for fifteen minutes, while the Board considered the names of the applicants.

When the meeting was called to order, Dr. W. H. Hoskins, Chairman of the Board of Censors, reported favorably the names of Drs. Geo. W. Bell and D. C. Gearhart. The name of Dr. Geo. B. Jobson was laid over until the next meeting, with the request that Dr. Jobson be notified to appear at that time.

A motion was made that the report be accepted as made. Seconded and carried.

Motion was then made that the Secretary cast a ballot in favor of the two new applicants. Seconded and carried, and Drs. G. W. Bell and D. C. Gearhart were made members of the Association.

The report of the Corresponding Secretary was then read:

REPORT OF CORRESPONDING SECRETARY.

MR. PRESIDENT AND GENTLEMEN:—At the last annual meeting of this Association there were 126 members enrolled, and to this number were added six new members,

viz.: Drs. W. T. S. Werntz, H. J. McClellan, John F. Vandegrift, Edward L. Kellner, Charles Bland and E. E. Terry—making in all 129 active members and three honorary members.

At the close of the last meeting it was ordered by this Association that fourteen members be suspended for non-payment of dues, and that each member suspended be notified of the same, and, if possible, induced to remit the amount of his indebtedness. Your secretary has accordingly sent out bills twice during the past six months to the suspended members, and each time enclosed a letter urging each member to settle his account, and thus continue as a member of this Association; also assuring him that the Association regretted exceedingly the necessity of being obliged to take this step; but that it was but just and right that all members should join in defraying the necessary expenses of the Association. That the Association had been under a great expense during the past year in its efforts to secure the passage of two bills which have recently become laws. And, further, that no Association could continue to do good work without the necessary funds. To these appeals there has as yet been no response; thus the membership has been reduced to 115 active members,

Still there are many who should be suspended. Some have received their certificates and declined to respond to all notices sent out. There are also five certificates ready for delivery. Although not less than four notices have been sent out to each member during the past eight months, I have been unable to obtain a response. A certificate has been ordered for Dr. S. D. Larzelere, who became a member in March, 1893, and is in good standing, but has never received a certificate. Dr. Thompson has been notified that if he will remit the amount due, his certificate will be forwarded to his address. Dr. Samuel B. Willard has also been notified to send in his application and remit the amount due, and his certificate would be forwarded. Neither gentleman has responded, although twice notified.

Dr. Geo. B. Jobson was duly notified to appear before the Board of Censors, to which he promptly responded, giving a good and sufficient reason for not being able to be present, but furnishing a paper of his experience with "Abortion."

All new members have been duly notified that their certificates would be ready at this meeting, on their payment of initiation fee, etc. To all members of this Association two notices of this meeting were sent out. Bills have also been rendered to all the members, and to those in arrears for more than one year a letter was enclosed. Some few have responded. Respectfully,

F. S. ALLEN, *Cor. Sec.*

A motion was made and seconded, that the report be accepted as read. Carried.

The President then appointed Dr. John R. Hart and F. S. Allen to examine the accounts of the Association.

The Treasurer, Dr. J. R. Hart, then made a statement as to the financial condition of the Association, showing a balance in the treasury, with a large amount outstanding against the members.

A discussion then ensued, in which nearly all present participated, as to the propriety of dropping all delinquent members. As a result of this discussion, Dr. Leonard Pearson

offered the following amendment to the Constitution and By-Laws:

AMENDMENT TO ARTICLE V, SECTION 2.

That the Recording Secretary shall keep an accurate record of the attendance of the members at all regular meetings, and after three successive absences the member shall be sent a copy of Article V, Section 2, and informed that the above section will be strictly enforced.

Motion seconded and carried.

A motion was made by Dr. J. R. Hart that all members in arrears for one or more years shall be notified that the claim against him will be placed in the hands of a collection agency, and if not paid within sixty days the Corresponding Secretary shall see that suit is entered and carried out. Carried.

Dr. Thomas B. Raynor made a motion that a committee be appointed to draft resolutions and forward the same to Mr. Wm. H. Woodring, of Northampton Co., Pa., to show our appreciation of his efficient, earnest and untiring service during the past winter in behalf of this Association by assisting the Legislative Committee in their efforts to secure the passage of the two bills presented by them to the last Legislature, and which are now laws of this State. Carried. The President appointed Drs. T. B. Raynor, Hart and Hoskins.

A motion was then made by Dr. Hoskins that a delegation be appointed to attend the United States Veterinary Medical Association at Des Moines, Ia., on September 10th, 11th and 12th, and the President appointed Drs. T. B. Raynor, Hart, J. B. Raynor, Helmer and Foelker.

The report of the Legislative Committee was next in order, and Dr. Hoskins, Chairman, reported as follows:

REPORT OF THE COMMITTEE ON LEGISLATION.

MR. PRESIDENT AND GENTLEMEN:—While I strongly importuned our President to place some other member at the head of the Legislative Committee for the present year, it was his wish that I should remain in the direction of this work until the legislation under consideration during the past two years should become fixed laws in our Commonwealth, and the promise that there was little left to be done led to my acceptance of this post of duty.

When we met in March last, at Philadelphia, the two acts which we had pressed so hard for consideration were in the last steps of their accomplishment, and as you all know they were finally adopted by both branches of the Legislature and subsequently received the Governor's approval, and are now fixed statutes of the State, but still in a very unsatisfactory and uncertain condition.

The act establishing a State Live Stock Sanitary Board, which was to have gone into effect on June 1st last, still slumbers, and we should endeavor to awaken by some means to-day the officials who are charged with its execution. But two of those who are to be members of this Board have received their appointment, and the one important position to our people generally—to us specially—still remains unnamed or appointed. While we had every reason to believe that the duties of this gravely important position would fall on the shoulders of our worthy President, and of whom it may be said with one accord, that to none would this position come in whom the veterinary profession the length and breadth of the State would feel more confidence and belief that through him the highest mission of this legislation for our people would be best accomplished. We have with one accord been sorely pained to realize that the exigencies of politics, the baneful perpetuation of the infamous "spoils system," has robbed our State of his valuable services for the time, and our people of the defense and protection this Board promised to assure them and the profession in the Keystone State of the possession of a wise law, conservative plan and valued measure alongside our colleagues of other States in dealing with these portentous questions of so much import to the health and happiness of our people. We still hope and believe that our Governor will make this appointment, and thus bring to his administration in this specific direction the valued services of one so thoroughly equipped for this place, in my estimation, and through whom there will inure to his administration, the people and our profession, the greatest good to the greatest number, the true and highest attainment of all legislation for the people, of the people, and by the people.

The second act, establishing a State Board of Veterinary Medical Examiners, after some delay and slight changes, passed both Houses, and, receiving the Governor's signature, became a law. Its provisions called for its enforcement on September 2d, when was designated the time for the convening and organization of the Board. The appointments to this Board have also been denied us, for the reasons named applying to the office of State Veterinarian and the Live Stock Sanitary Board. May the lessons that these experiences teach us, that the day of offensive partizanship has reached such a climax that for the good interests of our people it must be wiped out as a blot upon our country and an insult to the intelligence of our people. We are a part of the people against whom these charges rest, and we are factors of influence and power in the better solution of these questions; let us, then, never lose the opportunity of so casting our ballot that we can be charged with wearing a party yoke, or of yielding our virtues and manliest traits of independence by conceding our party slavery, when we cast a ballot for a bad man, who, by the machinations of machine nominations or combine allotments, may have obtained a place on the ticket that stands for the party which best represents the principles we uphold.

These appointments should have been made many months ago, that the work charged to the execution of this law should have been complied with as intended by its provisions and our lawmakers. Our people are entitled to all the benefits of legislative enactments, and a long-suffering public arrived at exact conclusions when her unqualified support was given to these measures through the campaign of education instituted by this organization and completed through the earnest, conscientious work of all its members, directed and supported at all times and at all hours by the untiring energy and devotion of our President. Therefore the denial of these benefits and security to the people of our State comes to them as a condition of affairs for which the weakest excuse that intelligent officials may offer would be those of a partisan, factional, political character.

During the past six months several violations of the State law have been brought to our notice, and vigorous action upon the part of several of our veterinarians led

to summary action and relief from these parasites of the profession. In Allegheny County two traveling, peripatetic veterinary dentists squatted themselves for a time to gull an innocent, confiding public by their arrogance and charlatanism, when, through the efforts of Messrs. Waugh and Rechtenwald, under the direction of your committee, warrants were sworn out for their arrest. Through some weakness of the machinery for the execution of our laws, these fellows learned of the action against them, and suddenly left for new fields and pastures green. In Washington County, action was commenced against another veterinarian for practice without registration, and was settled by the imposition of a fine and the removal of the offender to other parts. A third case coming under our notice was the location in Reading of a veterinarian named McNeill, claiming to be a graduate of Harvard Veterinary Department, and the only veterinarian in Reading honored with membership in the United States Veterinary Medical Association. He had gone so far as to make a registry of these facts on the prothonotary record. Dr. Noack kindly reported the case with a newspaper comment of his talents, which was a tissue of falsehood and misstatements. Investigation was promptly made, and the courtesy of Prof. Osgood quickly armed us with all the necessary evidence, upon receipt of which I wrote him a very firm and emphatic letter as to the false statements he had entered upon the county register, and that if the same was not corrected within forty-eight hours from the receipt of my letter prosecution would be commenced, whereat he disappeared promptly and failed to leave his new post-office address.

Such is, in brief, a few points of action relating to legislation during the past six months, and with such vigorous action in the enforcement of our new laws we soon would find that no State in our country was more highly blessed in the attainment of wise and just laws, all tending to a higher and better condition of affairs, a more exalted standard for our profession, a higher recognition of its importance to the well-being of every community, and a more generously conceded support and sustenance of our proiession, than Pennsylvania.

Respectfully submitted, W. Horace Hoskins, *Chairman.*

On motion, report was accepted.

Dr. M. E. Conard, Chairman of the Committee on Sanitary Science and Police, being unable to attend, placed his report in the hands of the President, and was as follows:

REPORT OF COMMITTEE ON SANITARY SCIENCE AND POLICE.

To the Members of the Pennsylvania State Veterinary Medical Association:

We, the members of the Committee on Sanitary Science and Police, beg to make the following report:

Since our last annual meeting (March 3, 1895) there has been an unusually small amount of disease of a contagious character reported to me, and likewise to my fellow committeemen. In the early part of the year, as you all know, there was legislative steps taken toward the inspection of live stock—with compensation for those animals diseased—on account of the presence of contagious diseases. The appointment of the officials necessary to the enforcement of this very just and valuable law has been deferred beyond the time when it was generally looked for, by the political contest just now passed. These conditions, I believe, have had the tendency, at least in my locality, to suppress the information necessary to a full report of our subject. If this be the case, as I believe it is, we should be enabled to give a much fuller report at our next annual meeting in March, 1896. But by the kindness of Dr. Bridge and others of the committee I am enabled to make the following report:

During the past six months there have been forty-one outbreaks of glanders reported, in which sixty-four horses and mules were affected, fifty-nine of which have been destroyed, and fifty-one have been paid for by the State at an average of $16.00 per head.

Several herds of cattle afflicted with tuberculosis have been inspected and tested with tuberculine, the diseased members destroyed and paid for by the State. This, however, has only been done where herds were badly affected, and their products were sold in large cities.

There have been three outbreaks of anthrax in herds numbering 220 head of cattle, of which 95 have died.

One new outbreak of *foot-rot* in a flock of Dorset sheep has been reported. The affected ones have all been killed and the others thoroughly disinfected, and it is believed to be stopped.

The flock of Dorset sheep reported at our last meeting as affected with *foot-rot* have been almost all killed for mutton, leaving only those that are surely free from the disease.

Also six outbreaks of Texas fever, with a fatality of twenty-eight cattle out of seventy head exposed. All cattle from localities known or believed to be infected with the Texas tick should be subjected to a thorough disinfection before being allowed to come in contact with susceptible herds. Perhaps a strong solution of creolin might do, but it should be something that would surely kill all ticks on them.

In addition, we have all had our outbreaks of influenza, distemper, strangles, etc., incidental to the season during which so many horses are shipped from the West.

Hoping this very meagre report may at least answer for an apology in my absence, I am, very truly yours, M. E. CONARD, *Chairman.*

There was no report from the Committee on Intelligence and Education, on account of sickness in the family of the Chairman, Dr. Adams.

A lengthy discussion then ensued, in which nearly all present participated, in regard to the long-deferred appointment of the State veterinarian.

Dr. Hoskins then suggested that Dr. Hart be appointed or asked to wait upon the Governor to solicit and look after appointment of the State veterinarian.

A motion was then made to adjourn until two o'clock P.M. Carried.

AFTERNOON SESSION.

Meeting called to order at two o'clock.

Dr. Hoskins made extended remarks as to the health of Dr. S. E. Weber, of Lancaster, Pa., stating that he was in a serious and critical condition, and asked that a fund be raised by the members of this Association to assist him, and to show our appreciation of this most honored, esteemed and worthy member. The collection was started by Dr. Hart, to which all present promptly responded.

The reading of the papers was next in order.*

In the absence of Dr. James Waugh, his paper on "Paracentesis Abdominalis" was read by the Secretary.

Dr. Otto Noack then read a paper entitled "Trichinosis."

Dr. Jacob Helmer also read a lengthy paper on "Physical Diagnosis."

In the absence of Dr. Charles Bland, his paper entitled "Tips in Shoeing" was also read by the Secretary.

Dr. S. J. J. Harger forwarded a paper on "Serum Therapeutics," which was listened to with marked attention.

The meeting was then adjourned, and the members left on the 8:12 P.M. train for Philadelphia.

Respectfully, F. S. ALLEN, *Acting Secretary.*

CORRESPONDENCE.

PROFESSIONAL ETHICS vs. BUSINESS METHODS.

BALTIMORE, Aug. 15, 1895.

Editor American Veterinary Review:

Referring to July number of the AMERICAN VETERINARY REVIEW, page 231, under the heading of "Sundries and Items," I would like to state that as far as upholding the profession of veterinary, that I have done more for the profession practically than any one man in the State of Maryland, having had in the neighborhood of forty students with me, and also many graduates from first-class colleges have come to me after leaving college to obtain a practical knowledge and to perfect themselves before starting out alone, and which they are willing and ready to attest to. My plant is considered the finest in the country, as parties from all over the United States have visited my City Hospital and Country Sanitarium, and pronounced it the finest they ever saw, and have taken pattern therefrom and built after them.

There are many who envy my success in the profession, I being much younger than a great many in the profession, for while they have been standing still I have been going

* The crowded condition of our columns will not permit of the publication of these papers in this number, but most of them will appear in the November REVIEW. —ED.

forward. They have even gone so far as to visit my patrons with whom I have contracts by the year, and offered to attend their stock for much less than the amount they were paying me, and then again, others who have just left college, and with no experience or expense, having an office in some livery stable where they attend the stock for their office rent, and are glad to get a patient if it will only pay enough to buy cigarettes; and then again, we have a Certificate Law in the State of Maryland, with a board of examiners from U. S. Veterinary Medical Association, who are allowed to manufacture veterinarians out of hostlers, stable bosses, wheelwrights, blacksmiths and horse-shoers, providing the hostlers, etc., have the $10.00 to pay for the certificate.

Owing to my extensive plants both in the city and country, and which aggregate about eighty-five thousand dollars, it would be foolish for me to think that I should sit in my office and let my interests go to destruction to satisfy my enemies; and as this is an age of advancement, I decided to issue the circular (which has called for the criticism in the July number of the REVIEW), sending it to the owners and breeders of horses and to all my patrons. If there is anything unprofessional in that, then I plead guilty, as it is a business matter with me as well as a profession.

Now, if any of my professional brothers, knowing what I have to contend with, can suggest another honorable way to pay my expenses and keep up my extensive establishment, please let me hear from them.

Respectfully yours,

DR. THOS. WM. SPRANKLIN.

NEWS SUMMARY.

ANTHRAX IN NEW JERSEY.—The editor of the veterinary department of the *Turf, Field and Farm*, a Jerseyman, replies as follows to the inquiry of a subscriber regarding the prevalence of anthrax in New Jersey: "That anthrax does exist in the western part of the State there is little doubt, but to the extent that rumor claims for it we are doubtful. We

must not forget that in all outbreaks of this nature the rule is to exaggerate and magnify the dangers. So far as we have been able to learn there has been and no doubt are still a few isolated cases of the malady, and, fortunately, of a mild character, with but little disposition to spread, and that it is likely to be transmitted to other animals we can scarcely believe. This statement, however, may be opposed by other views, notwithstanding it is a well established fact that horses are often found in stables with cattle seriously afflicted with anthrax, and where the mortality assumes a high rate, without being inconvenienced. We have noted this in a number of cases and believe it may be attributed to the fact that bovine anthrax, or what is better known as splenic apoplexia, is due to a form of bacilli different from that which affects the equine. The only remedy for this malady is isolation and vaccination; the latter no doubt is very efficacious, and we would not only recommend but urge upon all who may be afflicted by the trouble to procure the services of a veterinarian and have the entire herd, with others in the immediate vicinity, vaccinated."

TEXAS FEVER IN THE SOUTHERN STATES.—A telegram from Louisville states that a proclamation has been issued by the Kentucky State Board of Health quarantining against cattle from Virginia, North and South Carolina, Mississippi, Indian Territory, Alabama, Texas, Louisiana, Arkansas, Georgia and Florida, giving as a reason for this action that Texas fever has been introduced into these States recently and a number of cattle have died of it. The quarantine is to be maintained during all the year except December, January and February.

A REPRESENTATIVE OF THE UNIVERSITY REGENTS IN NEW YORK CITY.—The Regents of the University of the State of New York, in response to urgent requests, have decided to open an office in New York City for the accommodation of the immense amount of business which comes from here. The office will be at 10 East Forty-second street, and will be open after September 10, 1895, during the school week, from 9 A. M. to 4 P. M., and 7 to 9 P. M. Business hours will be from 9. A. M. to 12 M., but the deputy, Mr. Aza O.

Gallup, will see callers at other hours if they cannot come between 9 and 12. The representative of the Regents will have all publications, blanks and necessary records for the accommodation of law, medical, dental and veterinary students, and for all the professional, academic and higher examinations conducted by the University.

EXCHANGES, ETC., RECEIVED.

FOREIGN.

German.—Berliner Thierärztlische Wochenschrift. Thiermedizinische Vorträge. Therapeutisches Handbuch von Engen Bass. Berichtueber das Veterinärwesen un Königreich Sachsen für das fahr 1894. Oesterreichische Monatsschrift für Thierheilkunde. Schweizer Archiv für Thierheilkunde. Topographische Anatomie der Körperhöhlendes Rindes. Zeitschrift der Veterinärkunde für Rossärzte der Armee.

French.—Bulletin de Médecine et de Pharmacie de Burggraeve. La Presse Vétérinaire. Le Progrès Vétérinaire. Révue des Sciences Médicales. Annales d'Oculistique.

English.—Veterinary Record. Veterinary Journal.

Italian.—La Clinica Veterinarla. Giornale di Medicina Veterinarla Practica.

HOME JOURNALS.

Medical Record. Medical Review. Medical Journal. Modern Medicine. Medical Brief. Journal Comparative Medicine and Veterinary Archives. Therapeutic Gazette. Farm and Home. The Horseman. American Agriculturist. Breeders' Gazette. Our Animal Friends. Spirit of the Times. Turf, Field and Farm. Michigan Farmer. Wisconsin Agriculturist. American Cultivator. National Stockman and Farmer. Veterinary Magazine. American Horse Breeder and Farmer.

PAMPHLETS, CATALOGUES AND BOOKS.

Bulletin Experiment Station—Anthrax and Anthracoid Diseases—U. S. Department of Agriculture. The World's Markets. Annals of Surgery. State Library Bulletin No. 3 of N. Y. Libraries. State Library Bibliography No. 1. Modern Urethroscopy and Cystoscopy. Catheterization of the Ureters and Intravesical Removal of Tumors. Reports of Cases of Amputation of Omentum in Hernia Operations. Iowa Health Bulletin. Report from War Department.

COMMUNICATIONS.

Dr. C. Cresswell. W. L. Williams. O. Faust. O. Schwarzkopf. J. W. Adams. W. H. Hoskins. N. P. Hinkley. L. Pearson. Prof. J. Law. M. R. Trumbower. F. H. Kilborne. J. P. Lowe. W. L. Rhoads. J. H. Reynolds. Geo. C. Faville. J. Parker